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FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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Nations at Work

Message from SIR JOHN BOYD ORR
Director-General of FAO, to the International Timber Conference

THIS international timber conference you are opening is a development of the very first importance. You are coming to grips with grave and pressing problems and you have an opportunity to point the way, through constructive international efforts, to surmount them. It is a matter of great satisfaction to me to know that your meeting is actually getting under way; my one regret is that it is physically impossible for me to be with you.

In this message, which I am asking Mr. Leloup to present to you, I want to express my full awareness of the extent and urgency of forestry and timber problems, especially in the areas of Europe and other continents devastated by war. After a trip through Europe last autumn I became convinced that the housing situation presents a social and economic problem perhaps as pressing as the world food situation has presented in recent months. There is reason to hope, at any rate, that the food situation will show definite signs of improvement.

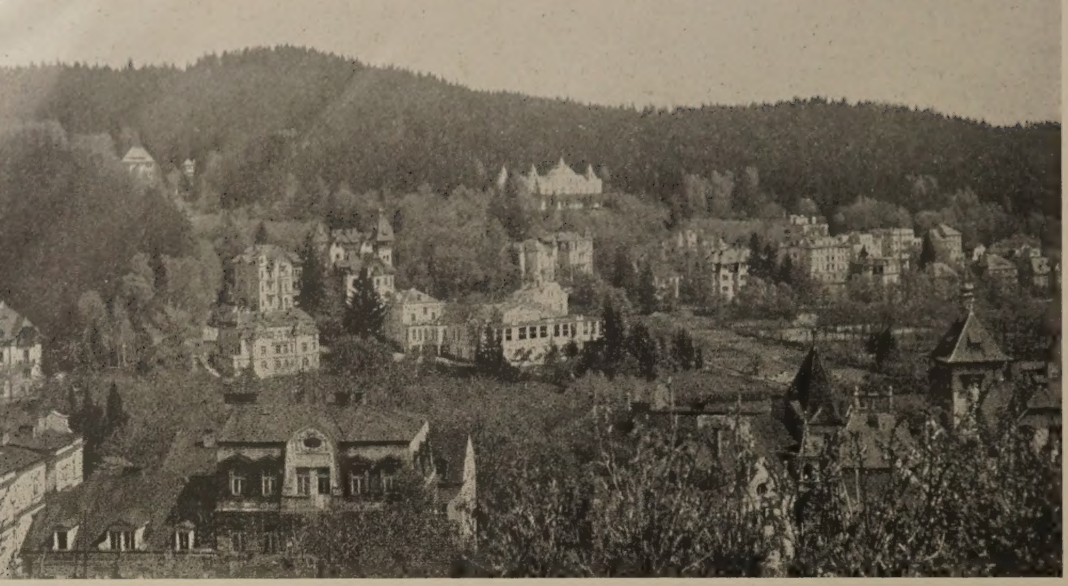
It is fitting that this timber conference should be held in an area that suffered great war devastation. I greatly appreciate the very considerable efforts which our host, the Government of Czechoslovakia, in the midst of its programs of reconstruction, must have made to make possible this conference within its borders. Also I want to express appreciation for the co-operation of the Emergency Economic Committee for Europe on the secretariat and in making available through their Timber Sub-Committee most extensive background material.

This conference is the first of a series of actions that will be worldwide. Plans are being made for conferences later in Latin America for the Western Hemisphere, and in the Far East. These, in turn, we hope will be followed by a world conference on timber and forestry, for there is no single region which can hope to solve its problems separately. The only lasting solution must come through worldwide co-operation.

In considering the needs of Europe and what should be done about them, you are undertaking an immense task. By the same token, I am confident that your accomplishments also will be large-scale. First, I expect that you will work out solid estimates of the quantities of lumber needed by the various countries for reconstruction and essential new building. Second, I expect that you will make an equally firm estimate of the maximum supplies of wood you can expect within the next year or so from the forests of your own countries without overcutting. Then, having brought the prospective needs and supplies together, you will know what proportion of your requirements will have to be met by lumber from other parts of the world. Third, I expect that you will make at least a beginning toward a program of long-range international action looking toward sound forestry practices, adequate supplies for all needs in various parts of the world, and fair incomes for forest workers.

Several times in the past I have made a statement in regard to food which I believe applies equally to products of the forest: If the nations cannot work together to solve the problems of supplying the people of the world with the basic necessities of life, there is little hope that they can work together on anything. I know that the nations *can* work together, and I believe they will, and that progress along that road will be made at your meeting in Czechoslovakia.

John B. Orr



Marianske Lazne, Czechoslovakia—a forest setting for the International Timber Conference

International Conference

MARIANSKE LAZNE, CZECHOSLOVAKIA, 28 April-10 May 1947

THE International Timber Conference was held in Marianske Lazne, Czechosolvakia, from 28 April to 10 May 1947. Conference members and observers, plus their advisors and staff, totaled more than 140, in addition to the Conference secretariat supplied by FAO headquarters and the Czechosolvak Government. Twenty-one member nations were represented, together with five nonmember countries, the French and U. S. zones of Germany, and five intergovernmental organizations. The list follows:

FAO MEMBER COUNTRIES REPRESENTED

Belgium	France	Norway
Brazil	Greece	Poland
Canada	Hungary	Switzerland
Chile	Italy	Syria
Czechoslovakia	Luxembourg	United Kingdom
Denmark	Mexico	United States of America
Egypt	Netherlands	Yugoslavia

The opening plenary session

NONMEMBER COUNTRIES REPRESENTED

Austria	Rumania
Bulgaria	Sweden
Finland	

INTERNATIONAL ORGANIZATIONS SENDING REPRESENTATIVES

Emergency Economic Committee for Europe
International Bank for Reconstruction and Development
United Nations
European Coal Organization
International Trade Organization (Preparatory Commission)

Two nongovernmental international organizations also had representatives present. They were: World Federation of Trade Unions and International Federation of Building and Wood Workers.

The Conference was opened by Foreign Minister Jan Masaryk in the Casino Hall of Marianske Lazne before a full assembly of delegates and visitors.

His Excellency welcomed on behalf of his government the representatives of countries which had accepted the invitations of FAO and the Czechoslovak Government. This was a very important conference, he said, and it would be a good omen if it could manage to achieve some really valuable results. It was his earnest wish that Europe might recover as soon as possible. That, however, could only happen if European countries got together and honestly faced the situation confronting them.

Mr. Masaryk drew attention to two reasons which made this Conference an important milestone in international economic relations. On the one hand, the Conference was the first international European assembly following the formation of the Economic Commission for Europe (ECE). Its success, or its failure, would possibly mark the success or failure of this commission's proceedings. Without a doubt, Europe had recovered before from grave crises but if one might hope that it would recover again from

this crisis, that hope must be based on collaboration of all countries within the commission, freely examining the shortcomings of the present situation and pooling all their efforts to effect the necessary remedies. Therefore, if the timber problem should be solved by the Conference at Marianske Lazne, a basis of agreement could, undoubtedly, be found for all the other problems with which the commission would be engaged.

On the other hand, the purpose itself of the Conference was of primary importance to the countries of Europe. Mr. Masaryk recalled in this connection the distress of people without shelter and the need of procuring lumber indispensable to the building industries in order to carry out the vast construction programs with which all European countries are faced.

Finally, after indicating some of the items this Conference would have to consider, notably that of price, and explaining that his duties as Minister of Foreign Affairs would not allow him to partake in all the Conference discussions, Mr. Masaryk wecomed the delegates once more and wished them a happy stay in Czechoslovakia. "It is a beautiful country," he concluded, "it is a democratic country which has been able to keep its precious European traditions. God bless you all."

After the message sent to the Conference by the Director-General of FAO, Sir John Boyd Orr, had been read, the Director of the Forestry and Forest Products Division, Marcel Leloup, gave an address which is reproduced elsewhere in this issue. He was followed by Karel Kavina, Chairman of the Czechoslovak National FAO Committee, and H. J. Hutchinson, Head of the United Kingdom delegation, who expressed his country's belief in FAO as an international body with the greatest possibilities for the good of mankind, and its expectation that the present meeting would lay the foundations for a co-operative effort in the creation of a broad scheme for the maintenance and systematic replacement of European forest resources.

The first plenary session closed with the election as Chairman of the Conference of J. Kolowrat-Krakovsky, head of the Czechoslovak delegation.

Conference headquarters had been set up in the Hotel King of England, named after King Edward VII of England who had stayed there during his annual visits to the old Marienbad. The Secretariat of the Conference was organized as follows:

Chairman: J. Kolowrat-Krakovsky (Czechoslovakia)
Vice-Chairmen: H. J. Hutchinson (United Kingdom)
V. Ropelewski (Poland)
Joint Rapporteurs: D. Roe (Canada)
B. Dufay (France)
Representative of Director-General, FAO: M. Leloup (FAO)
Secretary-General: E. Glesinger (FAO)
Assistant: L. J. Vernell (FAO)
Executive Secretary: J. V. Hyka (Czechoslovakia)
Administrative Secretaries: M. Greene (FAO)
J. Sobota (Czechoslovakia)

A detailed agenda for the Conference had been drafted by FAO and this had been made purposely elaborate so that all aspects of the European timber problem would receive consideration. The Conference, however, had some misgivings as to how its work could be most effectively organized within the ten days available and finally decided that it could not be bound by the draft agenda, but would follow its outline as a guide in conference discussions.

J. Kolowrat-Krakovsky (Czechoslovakia), Chairman of the Conference

Accordingly the Conference apportioned its work among three committees. The first committee dealt with short-term problems, the second devoted itself to consideration of longer range problems, while the third, composed of chiefs of the various delegations, was concerned with procedure arising out of the recommendations of the other two bodies and with the kind of international organization required to implement them. The third committee was constituted also as a steering committee and, in effect, co-ordinated the efforts of the whole meeting.

The officers of the committees were:

COMMITTEE I

Chairman: G. Cerf (EECE)
Chairman, Technical Subcommittee: J. Campredon (France)
Rapporteur: E. Loebl (Czechoslovakia)
Secretary: B. Pauphilet (EECE)
Assistant Secretary: V. Hasek (Czechoslovakia)

COMMITTEE II

Chairman: E. Saari (Finland)
Rapporteur: A. Schlatter (Switzerland)
Secretary: R. Fontaine (FAO)
Assistant Secretary: V. Sehnal (Czechoslovakia)

Foreign Minister Jan Masaryk (center) with D. D. Kennedy (U.S.A.) and E. I. Kotok (U.S.A.)

COMMITTEE III

Chairman: G. Lange (Sweden)
Vice-Chairman: A. Ceschi (Austria)
Joint Rapporteurs: D. Roe (Canada)
B. Dufay (France)
Secretary: J. V. Hyka (Czechoslovakia)
Assistant Secretary: P. Fevrier (France)

The committees considering short-term and long-term problems held regular sessions from 29 April to 8 May, with breaks on May Day and over the week-end, when delegates were given a welcome opportunity to visit places of interest in the neighborhood of Marianske Lazne. Both bodies set up subcommittees charged with the study of particular problems. Small drafting committees also assembled, when occasion arose, for the purpose of drawing up agreed resolutions and recommendations. The third committee, at its final meeting on the evening of 9 May, approved the draft of the Conference Report for acceptance by the Conference.

The Marianske Lazne Report[1] contains only the final results of ten days of intensive work and outlines the agreement reached on many vital points. Many of the issues raised at the Conference were highly controversial, and agreement was not attained without considerable discussion. Debates took place which reflected a real conflict of interests, but the purpose of the Conference was, after all, to bring such issues into the open and provide an opportunity for their discussion and, ultimately, for their solution on a basis of mutual concessions.

The proposal for a 10 percent increase in fellings, or its implied alternative of restricted consumption, aroused serious opposition. This was to be expected, since overcutting is against all orthodox principles of sound forest management, and no government contemplates lightly still more severe restrictions on timber consumption. In the end, however, this particular proposal was accepted as a deliberate sacrifice for the reconstruction of Europe.

The situation in Germany and again the manner whereby a satisfactory distribution of available timber supplies might be brought about aroused keen argument. Solutions, satisfactory to all parties, could not be reached and the Conference confined iteslf to embodying the feeling of its members in general recommendations.

The question of the application of sound forest management to all forests, privately owned as well as public, also led to considerable discussion. No definite agreement was reached, but it was decided to recommend setting up, within the framework of FAO, a European Forestry and Forest Products Committee, which should endeavor to co-ordinate the forest policies of European nations on this and related matters.

Altogether, the results achieved were considerable. The Conference established a clear-cut picture of the size and nature of the timber deficit in Europe. It brought about far-reaching agreements on a series of measures which should help to bridge the gap between current demand and supply in 1948 and 1949. Finally, it approved the concept that in Europe problems of forestry and forest products must be considered in broad perspective, transcending national boundaries. It demonstrated also that FAO was the appropriate body to further the solution not only of forestry problems but also problems of timber and forest products.

The spirit of accord attained through the proceedings of the Conference was evidenced in the speeches made at the concluding plenary session on 10 May, notably in those by B. Dufay, Rapporteur-General of the Conference, D. Kennedy, head of the U.S.A. delegation, and Georges Cerf, Chairman of the Timber Subcommittee of EECE. As Mr. Cerf said, by reducing the timber deficit, the Conference can give Europe not only more timber but also more comfort. Humanity, he said, badly needs comfort after all the suffering it has undergone.

Members of the Conference were received by President Edouard Benes at Hradcany Castle in Prague. President Benes hailed the International Timber Conference as a successful conference. Its success, however, to no small degree, was due to the hospitable surroundings and kindly welcome afforded by Czechoslovakia.

At President Benes' reception in Prague

[1]FAO, *Report of the International Timber Conference*, Washington, June 1947.

Events Leading Up to the European Timber Conference

THE Conference at Marianske Lazne afforded European nations an opportunity to work toward co-operation in the development of their forest policies and the exchange of their forest products.

This may be representative of a general trend. It is evident that relatively small countries cannot produce raw materials in sufficient quantity to attain living standards commensurate with our present level of civilization. International trade, therefore, is an absolute necessity for these countries. It is clear also that harmonious competition in world markets can only be achieved by agreements between nations, based on frequent discussions and permanent contact.

As far as timber is concerned, this trend toward co-operation is of recent origin. However, it may be said that the Marianske Lazne Conference is the culmination of several attempts to facilitate commercial exchanges of timber.

This Conference, for the first time, tried to combine the short- and long-term aspects of timber problems, linking them to the conditions which give rise to these problems. We shall consider here only the attempts previous to those at Marianske Lazne and the circumstances which led to the calling of this Conference.

First Attempts — the CIB

The first attempt at international co-operation in the field of forest products may be dated April 1932. At that time world economy, including timber trade and industry, was passing through one of its gravest crises. The relative scarcity of products which, after World War I, had maintained national and international timber prices at a high level in Europe was followed by a glut in the markets and a dizzy drop in prices. This was due to the fact that after World War I the newly created countries had immediately developed their timber industries and were already occupying an important position in the export markets, when Russia, emerging from her period of internal reorganization, sought to regain her former place in these markets. Increased production, coinciding with a decreased demand, quickly resulted in a state of chaos for which the League of Nations tried to find a remedy.

At Geneva, in the beginning of 1932, the League sponsored a conference of experts from all countries whose aim was to find a solution to the timber crisis. The mere bringing together of these experts had a very promising effect but the objective of the conference could not be attained, chiefly because statistical information, which is indispensable as the basis for a solution, was totally lacking.

In order to remedy this lack, Count Krystyn Ostrowski, President of the Supreme Timber Council of Poland, proposed some months later the creation of a permanent institution, the International Timber Committee (Comité International du Bois — CIB) which came into being in September 1932.

The CIB brought together the governments themselves as well as national trade associations; in many cases, both. All European countries, importers and exporters, speedily became affiliated, with the exception of Germany. Canada and the United States joined later and steady co-operation was maintained with the Latin American and African countries.

The CIB aimed at collecting and distributing world trade and industrial statistics of forest products, co-ordinating research in the field of timber utilization, organizing periodic conferences, drawing up agreements and altogether encouraging in every possible way co-operation between producer and consumer countries.

In November 1935, after long and delicate negotiations, the European Timber Exporters Convention (ETEC) was formed under the aegis of CIB; this existed until the outbreak of World War II and comprised all the principal exporting countries of Europe: Sweden, U.S.S.R., Finland, Latvia, Poland, Austria, Czechoslovakia, Yugoslavia, and Rumania.

Criticisms arose against this grouping of exporting countries for, at first glance, it could appear contrary to the legitimate interests of the importing countries.

It should be recognized, however, that the creation of this group was, in reality, a form of defensive reaction against the maneuvers, already begun at that time, of a country which, in the light of its future aggression, sought not only to attain precedence in and to rule the import market but also to center the entire power of European timber industries within itself. This country was the Germany of Nazidom.

Germany, in fact, before the outbreak of World War II and solely for her own benefit, had begun to "organize" timber production and distribution by semi-commercial and semi-political means based chief-

Finland—a country of vast forest resources
Photo by courtesy American Forestry Association

ly on a process of intimidation. When military victories enabled her to impose her will on the whole European continent, this organization was completed. The German Timber Trust, *Deutsche Forst- un Holzwirtschafts-gesellschaft,* formed the nucleus of this organization and was set up in Berlin during the summer of 1941. This trust held the majority of shares in similar organizations in all the exporting countries of Europe: Rumania, Croatia, Slovakia, Hungary, Bohemia-Moravia, Poland, Bulgaria and, later, the occupied part of Russia. The Scandinavian countries were exempted from this form of control but not from a certain "Permanent Forestry Commission for the Northern Zone" which, according to Berlin policy, would constitute the first move toward actual incorporation into the general organization. Further, in the importing countries, Belgium, Holland, and France, importers' "pools" under strict German control had been carefully organized.

No doubt the main objective of the German organization was to ensure to the Reich the immense quantities of timber necessary to the pursuit of war but Germany had not neglected the possibilities offered by the organization in time of peace. Problems of production and distribution, then apparent, had not been shelved and she was prepared to solve them — by force and to her own exclusive benefit.

The Timber Sub-Committee of EECE

These problems effectually arose as soon as the liberation of Europe was completed. They were not, moreover, the only ones of their kind, and it was to seek a remedy for these problems—this time for the benefit and with the free consent of the liberated peoples—that the Allies organized the Emergency Economic Commission for Europe (EECE). This Commission included a Timber Sub-Committee which, so far, has played a very important role in determining the quantities of timber available for export and in ensuring distribution amongst the European countries under the best possible conditions.

However, the aim of this subcommittee was limited. Formed in order to carry out emergency measures, it was able neither to frame a long-term policy for the distribution of forest products nor to suggest adequate means of finding suitable measures to increase production or temporarily reduce consumption. It was still less able to carry out either a short-term or a long-term European forest policy.

Moreover, the same criticism that was made of ETEC was applied, in reverse sense, to the Timber Sub-Committee of EECE: that it comprised only the importing countries of Europe. In fact, the subcommittee maintained firm relations with the exporting countries but, despite prudent action, it is possible that this mistrust could have, one day, found apparent justification.

First Steps of FAO

In May 1943, the United Nations held their first assembly at Hot Springs, U.S.A., and decided to create a Food and Agriculture Organization of the United

Nations (FAO) entrusted with the task of securing for the postwar world a regular supply of foodstuffs. An Interim Commission was set up to formulate a specific plan for this organization and to define its duties.

The question of forestry and forest products was not dealt with officially at Hot Springs. But, in December 1943, the Interim Commission adopted a recommendation that FAO should operate in the field of forestry along the same lines as it would in its other fields of interest.

In March 1944, the Interim Commission entrusted to a Technical Committee of Forestry and Forest Products, presided over by H. S. Graves, Dean of the Forestry School of Yale University, and former Chief of the U. S. Forest Service, the task of finding the best way to include the problems of forestry and forest products in the work of FAO.

The report of this committee[1] was presented to the First Session of the annual Conference of FAO at Quebec in the autumn of 1945. The report, which resulted in forestry and forest products being included in the activities of FAO, showed the necessity for international action in this field.

Previous to the creation of a Division of Forestry and Forest Products within FAO, a small group of technicians was asked to prepare a provisional balance sheet of the world situation. A report was presented to the Director-General on 1 February 1946, the conclusions of which were particularly alarming.

European Lumber Situation

Inquiries undertaken throughout Europe during the year 1946 confirmed these conclusions and showed, *inter alia*, that in Europe alone the number of people without shelter could be estimated at 100 million. These inquiries also showed that, on the Continent, there existed a grave discrepancy between requirements and the production of timber, a discrepancy which would increase with the years.

These findings were included in the forestry report,[2] presented to the Second Session of FAO's annual Conference held at Copenhagen in September 1946. It is this session of the Conference which made the following recommendation:

"In view of the gravity of the reconstruction problem in devastated countries of Europe, it is recommended that the appropriate international authority call an urgent conference of European governments to consider immediate action to provide devastated countries with the help they need in order to overcome the present difficulties with regard to lumber supplies, especially as far as these supplies are essential for reconstruction work."

Preparations for the Conference

Thus the idea of an International Timber Conference for Europe officially came into being, although it had been envisaged some time before and several countries had urged FAO to undertake this step sooner.

FAO's Preparatory Commission on World Food Proposals, which met in Washington from October 1946 to January 1947, went still further. Although created especially to recommend methods for carrying out a long-range world program for food and agriculture, the Commission stated explicitly that the lumber situation necessitated immediate action based on international programs and taking cognizance of both the short-term and long-term aspects of the problem and it suggested that an international conference examine the means that could be employed by FAO to meet this situation.

Well before the final reports of the Copenhagen Conference and the Preparatory Commission could be made public, the Division of Forestry and Forest Products of FAO had begun the preparatory work for the Timber Conference. It was not only a question of sending out invitations. The Director of the Division had first to secure the necessary co-operation from all countries, to sound official and unofficial opinion, and to examine the probable reactions.

When this was done and the way prepared, letters of invitation were drafted and the Government of Czechoslovakia which, for sometime past, had expressed a desire for close co-operation with FAO, invited the nations to convene in Czechoslovakia, suggesting as the location of their conference the charming site of Marianske Lazne in the heart of Bohemia's forests. Not only were European countries invited but also countries in the Mediterranean basin whose interests regarding timber are closely linked to those of Europe, a certain number of non-European countries especially interested in the problems that would come under discussion, and also various international organizations. The replies received were very satisfactory.

Meanwhile, important statistical work was being carried out by the Division of Forestry and Forest Products in assembling the necessary documentation for the conference. Questionnaires had been sent to all interested countries and the information received was included in the documents and worksheets for distribution to delegates. The basic information had been taken from material supplied by the Timber Sub-Committee of EECE. The contents of these documents and worksheets were discussed also at the Rome Statistical Conference held a few weeks prior to the Marianske Lazne Conference and were recast up to the last moment so as to show more exact findings.

The Preparatory Committee set up in Prague by the Czechoslovak Government was at the same time busy with the material organization essential to preparations for an international conference. These tasks were far from easy. At Marianske Lazne the hotels had been closed for the winter and had only partly repaired the war damage they had suffered. However, thanks to the eager co-operation of the municipal authorities, the services of Ing. Z. Urban, of the Ministry of Industry and Chairman of the Committee, and of Dr. G. Zverina and Dr. J. Sobota, his secretary and joint-secretary, Marianske Lazne was ready on 28 April 1947 to receive the delegates to the Conference in excellent conditions of comfort.

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[1]United Nations Interim Commission on Food and Agriculture, *Forestry and Primary Forest Products*, Washington, 20 August 1945.

[2]FAO, *Forestry and Forest Products, World Situation 1937-1946*, Stockholm, 15 August 1946.

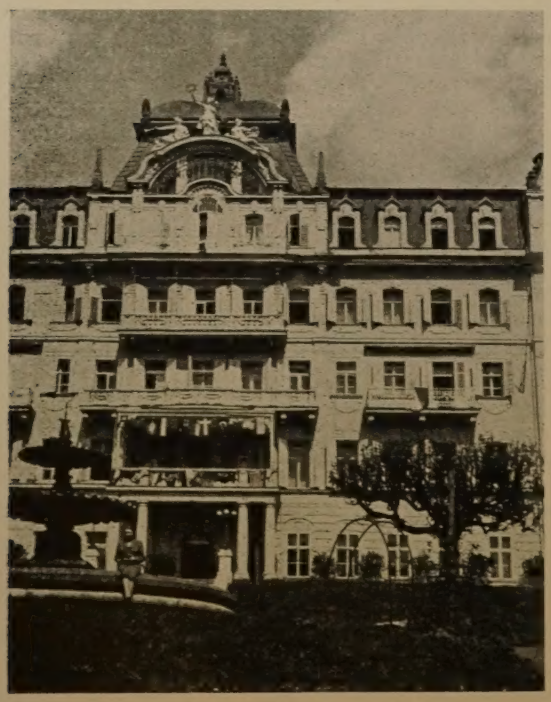
The World's Dilemma: More Timber, More Conservation

Address by MARCEL LELOUP
Director, Forestry and Forest Products Division, FAO

GENTLEMEN: Permit me, as Director of the Forestry and Forest Products Division of FAO, to elaborate on the problem which confronts us. The statistics which have been collected for this conference show that the countries of Europe and the Mediterranean basin which, in 1937, imported 6 million standards of timber, will receive scarcely 3 millions in 1947 and probably about the same quantity in 1948.

Since requirements are greater now than before the war, the crisis which faces importing countries in Western and Southern Europe is clearly evident. It is fundamentally due to the fact that exporting countries in Europe and North America have reduced their exports to a very considerable extent, and some of them, notably the Union of Soviet Socialist Republics and Poland, which furnished in 1937 nearly 2 million standards, have now become importing countries.

These figures speak for themselves. It is hardly necessary to remind you of the misery of the homeless people who live in ruins or in temporary shelters without even the most rudimentary sanitary requirements, a misery occasioned by the shortage of timber. Let me point out that this misery cannot well be expressed by statistics. I could see that for myself in Warsaw last summer. I was impressed by the amount of devastation in this city where only 5 percent of the buildings are intact and I asked how many persons were homeless. "Well, technically speaking," said an officer of the Statistical Bureau, "there are no homeless persons in Warsaw. In effect, during the night, the whole population disappears. Probably because many families are sharing the same room or because even in bombed houses some rooms are still available. The term 'homeless' only refers to the 2 million rural families which are living in holes in the ground."



Hotel King of England, Marianske Lazne, where the conference did most of its work

The need then exists, the deficit is real, and it is necessary to take action as quickly and as effectively as possible. This is the more imperative since the lumber shortage in the world and in Europe might have been avoided or at least lessened, if proper action had been taken in time.

A grave error has been made in the past, an error which it is important not to repeat, namely, to separate the study of timber utilization or trade from problems relating to the source, that is, the forest itself.

World Resources of Timber

There are 3,000 million hectares of forest land in the world, out of which only 1,200 million are at present exploited. This great reserve of timber can replenish itself indefinitely if it is not abused, as, unfortunately, all too often happens. Vast areas, however, which were deforested in the past can still be made productive again.

Forests have this incomparable advantage: as economic necessity dictates, fellings can at any time be reduced without too much inconvenience, overproduction can be controlled, and capital can accumulate *in situ*.

Despite this particular advantage, lumber, like other primary products, has been subject to slump and boom. This can be attributed not only to the general economic cause of their fluctuations, but also to mistaken forest policies which should be corrected in the future. Scarcities resulted from exploitation without regard to reconstituting the forest growing stock; failure to develop new resources by opening up untouched forests or by reforestation of denuded areas; and failure to work existing forests according to the trend of demand in industry and trade.

Surpluses arose from the fact that foresters and forest-owners were not aware of the real economic trends and were ignorant of the extent of regional and world demands for lumber.

All recommendations about lumber put forward at this Conference will, therefore, undoubtedly have a direct influence on forest practices and vice versa, and delegates will have to consider the two aspects of all the problems they will study.

Let me add this: The fact that the forest estate has been included in the terms of reference of the Conference makes it impossible to separate short-term and long-term problems, or at any rate, to study them apart.

Forests are not like agricultural land, on which every year, according to man's need, different kinds of crops may follow each other, and where one year's crop has no great bearing on next year's. With forests, the results of any short-term measures will be felt for years afterwards and, on the other hand, plans must be made now to achieve particular results in five, ten, or even fifty years.

I do not think it is necessary for me to emphasize any further the importance of these facts, which justify, in my opinion, the vast program submitted to the Conference.

However, when FAO called this Conference, it had in mind another aim which it considers essential to these discussions. That is, FAO wanted to bring together representatives of both the importing and the exporting countries of Europe in order to give them an opportunity to compare their different points of view.

Co-operation Vitally Necessary

The countries of Europe have all suffered to varying degrees from the long war years, and the devastation which accompanied the war. Having co-operated when they had to come to terms and later to fight their enemy, these countries must, in the same way, co-operate in peace, particularly in facing reconstruction. The first country which will have, willingly or unwillingly, to accept this European solidarity will be Germany, which is under the moral obligation of taking her full share in the economic reconstruction of the countries which were devastated. For this reason it is proposed that the case for Germany should be considered separately.

But all European countries must face the need for this solidarity. Their commercial, industrial, and agricultural demands are so intimately connected that it is almost inconceivable that one of them might retain for a long period a sound economic and social position among neighbors whose condition was not similar.

But Europe of herself cannot satisfy her own demands, either of lumber or of any other food or industrial product, and whatever her efforts, she is obliged to look overseas in order to meet her needs. This is the reason why the governments of non-European timber exporting countries have been invited to send representatives to this Conference. I should like to take this opportunity of thanking them for their willingness to accept the invitation of the Food and Agriculture Organization of the United Nations.

A moment ago I mentioned the anticipated deficits in Europe for 1947 and 1948. The prospects for the following years are no brighter, and this for a very simple reason, namely, that the forests which are at present accessible in Europe and North America can no longer meet both their internal demands and the

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requirements of other parts of the world which in normal times depended on them. Under these circumstances FAO considered it an essential task to place the prospects before the Conference and to supply as precise statistics as possible on the situation.

Taking this statistical information as a basis, every country will have to decide its own policy, not only for the immediate future, but even for the period up to 1960 and beyond, since in forestry you have to think in terms of decades and centuries.

Unfortunately, the information collected by FAO is very unsatisfactory as soon as we go beyond 1948. It is very easy to understand that governments and agencies are reluctant to answer questions on the remote future. On the other hand, it is indispensable for our discussions here to have a rough idea of plans and prospects beyond the immediate future. This is also a first essential in all sound forest management.

I hope that during committee meetings, delegates will be kind enough to fill in the gaps in the statistical information we have, thus enabling the Conference to get an idea of the general trends of the future.

It can be anticipated that present forest policies and economic plans will not suffice to balance the European lumber market. The Conference will have to study means whereby these plans could be modified and co-ordinated so as to obtain the desired result, and primarily to increase as much as possible the production of lumber in 1947 and 1948.

Consumption and Production

At first sight there appear to be two main lines of action which the Conference would see fit to pursue: control of consumption and control, or, more precisely, an increase of production.

We have said that the first line of action which would suggest itself to delegates is control of consumption. Necessity makes it inevitable to restrict consumption as far as possible. Many countries have already been obliged to put severe restrictions on consumption of lumber. Other countries may be reluctant to apply this solution. But such restrictions do not necessarily entail delays in building programs or in meeting the essential demands of the country. The progress achieved in wood technology, in the manufacture of boards from wood-waste, in prefabrication, make it possible to save such quantities of wood that if these modern techniques were applied everywhere, there would be an end of the lumber shortage. We can with advantage ponder the figures given by the eminent Chairman of the Subcommittee on Mechanical Wood Technology, which indicate that whereas under normal conditions a program for 100,000 buildings would require 1 million m^3 of lumber, the use of modern techniques could reduce this amount by about 275,000 m^3.

The time will come when reconstruction is completed, and then perhaps again supplies will outrun demand. But if one considers that enormous areas of the world are populated by people living in miserable shelters, without the most elementary conditions of comfort and hygiene; if one considers that even nearer to us whole families are crowded in miserable slums which are the shame of great cities, one may think that at least for timber a slump in the market should never occur. But it is the duty of all those interested to make the necessary collective effort to develop new markets, an effort which must be part of the general progress of civilization, and it is their duty to make it in due time, so as to ensure a smooth development in the world economy.

These, Gentlemen, seem to be the courses open to us to control consumption and you will have to examine ways and means in detail.

Must Increase Production

As far as production is concerned, to achieve control, one must go back to the source, namely, to the forest itself. Here the general trend of world demand, and what we have said of possible stimulation in consumption, show that the main aim must be to increase production.

No doubt it is necessary to take into consideration the possibility of crises and of slumps and one must foresee the action necessary to protect not only the forests, but also the workers and industries dependent thereon. However, such crises are but episodes in the economic history of the world and the main objective must remain to develop the maximum production of the wooded areas consonant with sustained yield, proper soil conservation and maintenance of forest capital.

As far as 1947 and 1948 are concerned, it is obvious that the easiest solution, which the Conference will probably have to adopt, will be an increase of fellings in most European countries.

And yet we all know that European forests have suffered destruction and overexploitation during the war. It will be a few years before we can get detailed statistics on the amount of damage done.

But it does seem that the reserves built up in most European countries from many decades of systematic management have been sufficient to allow them to withstand the shock of the war without diminishing too drastically the forest capital.

War damage was generally local in effect and was often equalized by undercutting of those forests farther removed from main routes and less accessible.

Let us not forget also that forest capital has a certain elasticity and up to a certain point forests constitute a sort of savings account on which it is possible to draw in case of need but only on condition that as soon as possible, and as well as possible, steps will be taken to replenish the capital which has thus been diminished.

When I was still Director General of Waters and Forests in France, I had, one day, a talk with the Minister of Reconstruction in which he expressed his surprise at the lack of timber in a country where there seemed to be so many flourishing forests. I said, "Certainly, we can and we must increase fellings, but on the condition that at the same time sufficient funds are put at the disposal of foresters in order to repair the damage inflicted upon the nation's forests."

The same observation may be made of the whole European continent, and even of the world, since abuse of forests does not affect Europe alone, and the position is worsened when great countries like the United States, which previously were exporting countries but which have drawn on their forest capital even more than Europe, are forced to decrease or even stop their exports altogether.

In those countries where immediate or early compensation for reduction in forest capital can be expected from opening up areas previously unexploited, or by afforestation, an improvement in estimates of output should be possible. Delegates will probably have to work along these lines for immediate needs.

Increased fellings will entail many difficulties, but the representatives of European countries have been convened here to find a solution to these problems during the Conference itself, or at least to indicate from their studies of the situation a solution possible of achievement in the shortest possible time.

The fact that concrete results have been obtained for other materials, particularly many food products, encourages us to say that it is not impossible to solve these problems, that only the opportunity for solving them was lacking, and that also this Conference can and must find practical solutions for the urgent problems with which we are confronted.

Even so, increased fellings in accessible areas are not alone sufficient and we have already mentioned why they must be considered as a very short-term remedy.

Untapped Forest Resources

Conference documentation shows the necessity for Europe to turn to forest regions of the world which are as yet unexploited, in order to get the supplementary quantities of timber we require. Generally speaking such forests do not exist in Europe, but you will have to make suggestions in this connection, and they

will later have to be considered by other regional conferences or by the general annual Conference of FAO. You will also have to examine how such resources could be made more accessible, what are the obstacles and the means by which they might be overcome.

Although these resources are not unlimited, they are at least considerable. However, when drawing on them, you will find it important to avoid the mistakes which have too often been made in the past and which resulted in their exhaustion.

Forest legislation in most countries, at least in the more advanced ones, is based on the principle that forests are a legacy from the preceding generations to the present one which the latter has to pass on to future generations intact, if not increased.

This principle is applicable to all forests of this earth but it can be said to be of particular significance to tropical forests, which constitute such an essential factor for the present and future welfare of the less fortunate peoples, especially in Africa. Indeed, these tropical forests not only protect the soil and stabilize the climate but they are also a vital source of income and wealth.

The opening up of new forests, and especially of tropical forests, should not become a purely commercial proposition geared to rapid exploitation but should also and above all be a silvicultural operation. Its objective should be the gradual improvement of the resources or at least their maintenance in a perfect state of vegetation in the same way as fellings in European forests aim at conserving and improving the growing stock.

The opening up of new forests areas does not constitute, however, the only means for increasing the output of lumber, and you will be called upon to examine other alternatives which I think I do not need to deal with in detail at this stage.

One of the means is improving equipment for sawmills with a view to reduction of waste. New logging equipment and especially mechanization constitute another remedy which should make up for the insufficient supply of manpower in the forests, the latter being in many countries one of the main obstacles to adequate wood production.

Better Working Conditions

Increased mechanization of logging methods would also lead to more adequate working conditions for loggers and other woodworkers and would thereby also attract greater numbers of such workers. Thus, this mechanization is part of improved living conditions for woodworkers. Greater welfare and more comfort for these men is in turn an essential requirement if we do not want to be faced with a constant reduction of the available manpower supply for these hard and exacting tasks. For these woodworkers a forest is not only their place of work, but also the place where they spend most or all of their life, at least during the logging season. Minimum standards of comfort and hygiene must thus be provided for them and for their families.

The protection of workers against unemployment as a result of possible future slumps calls for special study. These workers are entitled to expect from the forest the same stability and security which have been obtained by workers in other industries.

Use of Wood Substitutes

Finally, the introduction of wood-based substitute materials is another important object to be studied by this Conference, not only because such substitution will facilitate a reduction of saw timber requirements but because the actual utilization of waste will lead to employment of products which have not been used heretofore.

This utilization of substitute materials will not only increase working opportunities in the forests, since large quantities of waste now abandoned must and will be profitably removed, but the higher returns from the cut will contribute to improved management of the resources and intensified silviculture, both of which are now frequently rendered impossible due to low yields in quantity and value.

It has previously been said that this Conference has already given rise to great hopes. It would be wrong to think that a single meeting like the one opening today can lead in a few days to solutions which will not only solve the present crisis but also all the problems of the timber and the forests of the world. But we will have already achieved a satisfactory result if we can reduce the deficit for 1947 to some degree and realize a more important reduction in the deficit for 1948. In addition we ought to try to agree on a number of recommendations which could constitute the basis of a co-ordination of forest policies and construction programs in Europe and thus be the starting point of future regular co-operation both on the regional level and for the world as a whole.

It would be easy to emphasize the importance of your task by reminding you of the millions of families who are looking to this meeting for help in their long-drawn suffering and of the millions of human beings who depend for their health, welfare, and maybe even for life itself on the results of this Conference. However, each of you here knows the difficulties of his own country and can easily find out from his colleagues about the difficulties of other countries in Europe and even across the seas.

Moreover, the figures speak for themselves and the gap between import requirements and export supplies is such that it can only be bridged by rapid and well-concerted measures.

To find these emergency measures, gentlemen, is your task here. In ending my remarks let me express the hope that you will be able to examine and agree on a long-term procedure which will be capable of sparing the forest, its industries, and its workers the menace of future and recurrent crises.

Timber Shortage in Europe

THE end of World War II brought in its train the fear of famine in Europe. That food would be short and distribution difficult had long been foreseen and the Allied forces, followed by UNRRA, were able to divert relief supplies into the more desperate corners of the continent and avert catastrophe. It was not until after this had happened that the countries of Europe were able to look around and take stock of the situation.

It soon became apparent that a general scarcity of wood supplies was going to become one of the principal factors delaying reconstruction. International trade and normal channels of distribution of timber had been disrupted but there was no efficient international machinery to stimulate a flow of forest products and to circumvent a crisis if one should arise. Such machinery has had to be evolved slowly. There were, indeed, precedents to work on and a growing tendency towards full international co-operation aided the adoption of regional rather than national perspectives in trying to solve the timber problem. Now there is an intention to pool resources in the interests of all countries and such a course must, when properly directed, ease the present strain in Europe.

Consumption in Europe

About 30 percent of the land area of Europe, including the territories of the Union of Soviet Socialist Republics, is covered with forest. This means that there is approximately one hectare of forest land to each inhabitant, yielding an average of one cubic meter of wood per head of population, which is regarded as adequate for the current requirements of industrialized nations.

Europe should, then, as an entity, be self-sufficient in wood. It has indeed been a regular net exporter of forest products. In the years immediately preceding the outbreak of World War II, the roundwood equivalent of net exports of pulp and paper was approximately 12 million cubic meters. There was, however, at the same time a lumber deficit, for this reason: Certain countries traditionally exported substantial amounts of softwood lumber to South Africa, South America, Australia, and other overseas territories; over-all lumber production was inadequate to cover both these exports and requirements within Europe, so that the United States of America and Canada had to provide imports of about half a million standards per year to make up the balance. This state of affairs has existed since the beginning of the present century.

During the war there was, of course, practically no outlet for exports from Europe but once hostilities ceased, trade was quickly started again, owing to the great need for food, goods, and equipment which could be obtained in exchange for forest products.

It was to be expected that the end of the war would also release an enormous pent-up demand for timber for reconstruction and new work within Europe. There were few stockpiles to draw on. Coming on top of foreign trade requirements, such a demand would have meant heavy cutting of all accessible forest resources and abandonment of established principles of forest conservation; for Europe, this was unthinkable. There was, therefore, every prospect of a formidable gap between production and consumption requirements.

But current demand did not reach the proportions which might have been expected. (See Table 1.) In 1948 the United States of America expects to use 14 million standards of softwood lumber, or 25 percent more than in 1937, and Canada expects to consume 33 percent more than in that year. A similar upward trend might have been expected in Europe but the 1948 requirements of that continent and the Mediterranean area, excluding the U.S.S.R., are placed at 11.5 to 12 million standards, still almost 10 percent less than these regions consumed in 1937.

The reason for this is not primarily insufficent production. More cogent factors have limited demand, such as shortages of foreign currencies; lack of other construction materials, coal, manpower, and equipment; the general economic conditions of the continent; and the high price levels to which softwood lumber has risen all over the world. The present basic quotation for Scandinavian softwood lumber c.i.f. London is more than three times as high as in the summer of 1939, but several European countries find it difficult to sell lumber profitably even at these prices in view of mounting costs for labor, production, and transportation.

Consumption therefore has had to be restricted to essential requirements only and chiefly to housing needs. Most countries are compelled to exercise firm control over the use of lumber, by limiting, for instance, the amount permitted per dwelling unit and refusing lumber for all "nonessential" purposes. Such economizing is, of course, inherently undesirable if it should lead to a permanent reduction in requirements. It is unlikely, however, that this will happen. Under present circumstances, restrictions are inevitable, but it is hoped that, when timber becomes more abundant and controls can be removed, present economies will have taught useful lessons in efficient use of a valuable product.

Great efforts are also being made to scale down total requirements by securing a more complete utilization of all available timber and by eliminating waste in the conversion of the raw material to finished goods.

As economic conditions in Europe improve, demand will tend to approximate more nearly to real requirements. At the same time, a more stable economy should result in an increase in softwood lumber output which will to some extent offset expanding consumption needs.

Import Requirements

Table 1 indicates how obstacles to buying and using softwood lumber served to diminish the gap between supply and demand in 1946. Europe could not, of course, meet even her essential requirements without inter-European trade and a flow of lumber from overseas. The extent of such import requirements, after

TABLE 1.—CONSUMPTION AND OUTPUT OF SOFTWOOD LUMBER, Including Lumber Equivalent of Sawlogs
(*Thousands of standards*)

Country	1937		1946	
	Consumption	Output	Consumption	Output
Mainly importing				
United Kingdom	2,400	(115)*	[1]1,200	89
Ireland	110	33	110	13
France	(900)*	674	843	[2]700
Belgium	275	(100)*	95	21
Luxembourg	----	1	9	4
Netherlands	640	35*	128	5
Denmark	300	40	168	55
Germany	(3,500)*	(3,000)*	[3]1,194	[3]1,461
Switzerland	230	170	304	230
Hungary	184	4	90	8
Spain	(200)*	(80)*	(174)*	(124)*
Italy	420	187	188	172
Greece	86	17	68	34
French North Africa	67	7	53	10
Egypt	98	----	32	-
Iraq	(14)	----	(13)	----
Palestine	(54)	----	(58)	----
Subtotal	9,478	4,463	4,727	2,926
Mainly exporting				
Norway	290	290	340	320
Sweden	545	1,406	725	1,200
Finland	355	1,330	280	620
U.S.S.R.	(7,500)*	(8,750)*	(8,370)*	(8,000)*
Poland	428	770*	663*	320*
Czechoslovakia	393	555*	504	535
Austria	90	400*	193	300
Yugoslavia	(350)*	(600)*	(275)*	(325)*
Bulgaria	75	75	68	68
Rumania	360	535	154	225
Portugal	(300)*	(300)*	(285)*	(300)*
Subtotal	10,686	15,011	11,857	12,213
GRAND TOTAL	20,164	19,474	16,584	15,139

Figures in parentheses represent estimates made by or for the International Timber Conference.
*Both hardwood and softwood lumber.
[1]U. K. figures for 1946 refer to *actual consumption* during the year and do *not* represent figures of national requirements in that period.
[2]Includes French production in Germany.
[3]Only French, Br. and U. S. zones of Germany.

taking into account domestic production, is shown by Table 2.

For 1947, the major lumber-importing countries, working together in the Timber Sub-Committee of the EECE, consented to diminish their demands to figures far below original estimates of immediate needs. In this way import requirements were reduced to only 2.73 million standards for Europe and the Mediterranean area, which was only 221,000 standards in excess of prospective supplies.

Such action is not, of course, compatible with the rapid reconstruction and rehabilitation of Europe. It is imperative that softwood lumber supplies should reach as soon as possible the full level of essential requirements and that gradually the controls and limitations on consumption should be removed so as to permit adequate use of this raw material by all nations.

EXPORT SUPPLIES

It is still perhaps insufficiently realized that it was not so much exceptional demand that precipitated a timber crisis as an exceptional drop in available export supplies. The basic trouble is that the forests of Europe and wood imports from North America are no longer sufficient to meet European needs and the requirements of the countries of the Mediterranean area.

In general, the capacity of European forests to produce the large logs needed in lumber manufacture has

TABLE 2.—SOFTWOOD IMPORT REQUIREMENTS OF EUROPE, Including Lumber Equivalent of Sawlogs
(*Thousands of standards*)

Country	1937	1946	1947	1948
Europe Proper				
United Kingdom	2,316	810	1,621	1,500 to 2,000
Ireland	73	13	60	80
France	226	165	455	450
Belgium	175	74	220	325
Luxembourg	[1]	3	5	7
Netherlands	598	124	330	445
Denmark	200	129	142	182
Switzerland	41	48	110	110
Hungary	192	9	80	90 to 100
Spain	[2]120	[2](50)	(50)	(50)
Italy	232	16	366	587
Greece	[2]70	[2]32	130	140
Norway	[2]41	[2]26	18	18
Poland	----	256	----	225
Germany	731	----	----	----
Total	5,015	1,755	3,587	4,209 to 4,719
Mediterranean and Near East				
French North Africa	60	43	106	106
Egypt	98	32	96	100
Iraq	14	13	(15)	(15)
Palestine	54	58	(60)	(60)
Total	226	146	277	281
U.S.S.R.[3]	----	(400)	(150)	(100)
Other import requirements	50	40	30	300
GRAND TOTAL	5,291	2,341	4,044	4,890 to 5,400

Figures in parentheses are estimates made by or for the use of the Conference.
[1]Included with data for Belgium.
[2]Includes hardwood imports
[3]Imports as reparations.

declined rapidly. Then, the war further reduced the volume of lumber that could enter inter-European trade. The causes of this are partly temporary and partly permanent. Internal demand is rising very considerably, even in those countries which were only indirectly affected by the war, and surpluses therefore tend to be absorbed, but beyond this most of the exporting nations have been compelled to curtail their over-all lumber output . For instance, Sweden is short of coal and must divert labor and materials to the production of fuelwood. Finland's forest area has been diminished by 12 percent and her forest industries by about 25 percent.

Even where output has not declined, other factors have contributed toward a decrease in exports. The U.S.S.R. must absorb most of its timber output for reconstruction and development within its own borders. The countries of Central Europe each have their own troubles. Rumania is short of food and is supplying large quantities of wood to the U.S.S.R. during the reconstruction period. Transport conditions in Yugoslavia are bad. Austria, too, is short of food and the presence of the Allied occupation troops has not eased conditions. Czechoslovakia has insufficient manpower and is short of equipment. Poland's forests suffered severely during the German occupation and imports are now required.

In partial compensation Germany, from being an importer before the war, has now become the largest exporting country in Europe but there is no certainty as to how long this state of affairs will last.

Since the end of the war, then, export supplies from European sources have dropped to less than one-half of their prewar level. At the same time it has proved impossible to obtain any substantial increases of lumber imports from North America and other overseas sources. This is demonstrated by Table 3.

TABLE 3.—SOFTWOOD LUMBER EXPORTS AVAILABLE FOR EUROPE Including Lumber Equivalent of Sawlogs
(*Thousands of standards*)

Country	1937	1946	1947	1948
From European countries				
Germany	.....	267*	328*	(200)*
Sweden	903	457	400	400
Finland	1,045	359	410	(410)
U.S.S.R.	1,362	30	(75)	(90)
Czechoslovakia	176	43	98	66
Austria	310	107	64	64
Yugoslavia	222	50	(100)	(100)
Rumania	353	125	104	111
Other countries	385	50	50	50
Subtotal	4,756	1,488	1,629	1,491
From Overseas countries				
Canada	509	530	550	550
United States	109	120	250	300
Chile	.....	7	(10)	(15)
Brazil	.....	60	70	90
Subtotal	618	717	880	955
GRAND TOTAL	5,374	2,205	2,509	2,446

*French, Br., and U. S. zones of Germany.
Figures in parentheses are FAO estimates.

THE LUMBER DEFICIT

When the International Timber Conference met in Czechoslovakia, it found that prospective export supplies of softwood lumber available for Europe in 1948 were likely to be 2.5 to 3 million standards (6.5 to 7.5 million metric tons) short of essential import requirements. It can be assumed that approximately half the total consumption of softwood lumber goes directly into housing construction and that two standards of softwood lumber are required per dwelling unit; the deficit was thus likely to compel European countries to postpone the building of some 600 to 700 thousand dwelling units and to curtail to a considerable degree other activities in which lumber constitutes an essential factor, such as construction of transport equipment, and packaging of food and other goods for export.

Against an estimated world production of softwood lumber of 40 million standards, the European deficit represents only some 6 percent. It appears relatively small even in proportion to Europe's actual lumber production of 16 million standards. It should be remembered, however, that the deficit affects primarily the importing countries of Western and Southern Europe, including the non-European countries bordering the Mediterranean. These countries had estimated their essential requirements for 1948 at 7.8 to 8.3 million standards and could only expect to secure two-thirds of their demands. For these countries, many of which have been severely ravaged by war and occupation, the lumber shortage creates a truly alarming situation.

Shortages are not confined to softwood lumber. A number of other commodities are affected to a lesser degree, such as mine timbers, railway sleepers (ties), hardwoods and pulpwood. Although these provide additional problems for early international consideration, any amelioration in the softwood lumber position will also ease the situation for these other forest products and therefore they do not assume the same prominence.

The lumber deficit of about 3 million standards anticipated for 1948 is in fact very real and it seems that a like and possibly growing figure must be expected for so long as supplies fail to reach a substantially higher volume than at present.

The Conference at Marianske Lazne therefore concluded that the lumber deficit was not a short-term emergency problem but had every appearance of becoming a permanent feature of the economy of Europe, claiming the fullest attention of competent international bodies and demanding appropriate action.

This statement must, however, be qualified in one important respect, namely, with regard to the special position of the U.S.S.R., which was not represented at the International Timber Conference. The U.S.S.R. has enormous reserves of forests. Its forest area represents more than four times the extent of the forests of all other European countries combined. If the U.S.S.R. were able to expand the exploitation of its timber resources and the export capacity of its forest industries, the fear of a continuing lumber deficit would be largely removed.

METHODS OF OVERCOMING THE SHORTAGES

The primary object of the International Timber Conference was to reduce and eliminate so far as possible the difference between essential requirements and available supplies of softwood for the current year, and for 1948 and 1949. To this end, unanimous agreement was reached on a number of measures which could offer a satisfactory solution if applied simultaneously.

a) *Increased Fellings.*—All countries promised to

increase their cutting for production of sawn softwoods by 10 percent during the felling seasons 1947/1948 and 1948/1949. The resulting increase in output must have the effect either of creating more exports or of diminishing the demand for imports. Certain countries, such as the United Kingdom for example, are so situated that it must be left open to them to achieve the same result by any other means which they might wish to put into effect, such as restrictions on methods of using lumber or by controlled consumption.

The Conference was ready to recognize that a certain number of countries would not be able to put forward the effort required without outside assistance, whether this should be derived from an appropriate international organization or some other source, owing to their shortages of manpower, food, coal, machinery, credit, or because of other factors.

b) *Increased exports from countries within Europe.*—It was hoped that certain major European exporting countries, in particular the U.S.S.R., might be able to increase their lumber exports in 1948 and 1949 over and above the 10 percent. Prior to the war, exports from the present territory of the U.S.S.R. were close to 1.4 million standards. In 1946 and 1947, less than 100,000 standards per year reached European countries from that source. If it were possible for the U.S.S.R. to resume lumber exports approaching the prewar scale, the deficit would largely disappear.

c) *Possible additional exports from Germany.*—A number of countries emphasized that Germany was responsible for their present reconstruction needs and that German armies had not hesitated to destroy the forests of occupied countries, especially Poland. They concluded that their needs should receive the highest consideration and proposed that the occupying powers should not hesitate to impose heavy overcutting on German forests, both by reducing the rotation and by converting certain forest estates into agricultural land. It was suggested too that a ceiling be set for the per caput consumption of timber in Germany, in line with the "industry level plan" adopted for steel and other commodities. If such measures were applied, very substantial amounts of lumber and possibly pulp could be delivered for the needs of other countries.

Against this view, some of the occupying powers emphasized the immediate urgency of speeding up the reconstruction of Germany in order that all Europe might reap the benefits of this country's industrial potential. They also pointed out that destruction of German forests might have very undesirable effects a few years hence and recommended a more conservative policy.

In 1947, production in the British, American, and French zones of occupation is organized so as to provide the equivalent of 328,000 standards against the reconstruction requirements of other European countries, plus an unspecified quantity from the Russian occupation zone.

The Conference finally decided to draw the attention of the occupying powers to the need and possibility of securing important supplies of forest products from Germany and the question undoubtedly will come up again for further consideration.

d) *Possible additional exports from overseas sources.*—In determining the deficit for 1948, it was

Selective cutting and complete utilization, Poitiers, France
Photo by courtesy U. S. Forest Service

estimated that Canada, the United States, Chile, and Brazil would contribute 955,000 standards towards Europe's needs. This is an increase over estimated exports for 1947 and also somewhat higher than average prewar supplies. A possible further increase in exports from American sources was noted with satisfaction.

e) *Economy in use of timber and limitation of consumption.*—A whole series of measures was examined by the Conference, involving the establishment of government controls restricting the use of lumber to essential purposes; the achievement of a considerable reduction in estimated requirements by applying modern methods in construction and other fields; and the use of fiber board and other building materials derived from wood waste. All countries were urged to give the utmost attention to such economies and to seek FAO's technical advice in these matters.

It seems reasonable to hope that a combination of all the above courses, if put fully into effect, could reduce and indeed eliminate the lumber deficit. However, it must be remembered that, taking the larger view, some of these emergency remedies are inherently undesirable and some even threaten to create a more serious crisis a few years hence.

Conscious of the drain imposed by the war on European forests, many foresters are apprehensive lest further overcutting may do lasting damage to forest reserves. Compulsory reduction in timber consumption is equally undesirable, since it must mean a prolongation of acute misery for large numbers of people in many countries and conflicts with that improvement in housing and living standards which the United Nations and FAO have adopted as their goal.

It is therefore imperative to draw up a number of longer range measures capable of offsetting the negative effects of these emergency solutions, and of gradually restoring in Europe and the world a proper balance between adequate wood consumption and supplies.

The Conference devoted a great deal of attention to the initiation of a sound European forest policy and adopted a set of recommendations directed towards:

a) Achievement of adequate housing and living standards in Europe.

b) Restoration and improvement of forest resources in Europe and a substantial increase in yields.

c) Fuller utilization of the annual forest crop.

d) The opening up of hitherto undeveloped forest resources in order to supplement the inadequate supplies of lumber from European forests now accessible.

The intention of FAO to hold forest and forest products conferences in other parts of the world, in furtherance of such aims, was strongly supported.

Practical Means of Securing International Co-operation

International co-operation with regard to European timber problems is not new. Prior to the war, the Comité International du Bois (CIB) and the European Timber Exporters Convention (ETEC) attempted to stabilize the European timber market by quota agreements and other arrangements, concluded principally among the major exporting countries. Since 1945, the Timber Sub-Committee of the Emergency Economic Committee for Europe (EECE) has attempted to obtain agreement among a number of leading European importing countries on the distribution of available lumber supplies.

Most of these schemes were too limited in scope, and participants were drawn from too restricted a circle to allow full results. Delegates at Marianske Lazne felt strongly that an approach on a broader scale was needed to solve the present crisis and to open the way for a satisfactory permanent solution. In particular, they deemed it important to ensure that timber production, distribution, and consumption should always be considered as an inseparable unit, and further that there should be a proper co-ordination of short-term and long-term policies.

While the application of the technical and economic measures recommended by the Marianske Lazne Conference is the responsibility of individual governments, it will require also the continued assistance of many international agencies, above all, of the Economic Commission for Europe and the Food and Agriculture Organization of the United Nations.

The manner in which such agencies can best further the work of the Conference, and the extent of any aid that might be required, are still under discussion at high levels. The annual Conference of FAO will certainly take steps to correlate the various ideas which have been put forward as suggestions for future action. It will also want to co-ordinate measures so that duplication of effort is avoided and divergent trends, which have already made their appearance, are once more blended.

V. Ropelewski (Poland) at President Benes' reception

Outlook for the Future

Thus the Marianske Lazne Conference brought about far-reaching agreements on a series of measures which should go far towards bridging the gap between requirements and supplies in 1948 and 1949. This will give a breathing space in which to formulate more definite long-range measures. The Conference put on record the understanding that the forest resources at present under full exploitation will not in the future suffice to satisfy the growing requirements of the world and that as yet untouched resources must be opened up and brought under systematic management. The north of Canada, Alaska, Latin America, Africa, parts of Southeast Asia and the territories of the U.S.S.R. offer such resources.

Support was given to the idea that forest production, consumption of wood, and distribution of supplies are complementary aspects of one problem. Both forest policies and industrial policies must be co-ordinated to a far greater extent than hitherto. This is a fundamental concept which FAO is striving to diffuse everywhere. Long-term policy must be formulated in the light of short-term problems; short-term problems must be solved with due attention to long-range policy.

A proper appreciation of the idea of forestry as the principal means of land use after agriculture and of the importance of timber as one of the world's major crops is now becoming widespread in a way that certainly was not apparent before the war. Private owners, communities, and business concerns are being strenuously encouraged to subject their forests to proper methods of management so as to obtain sustained yields. Forests must no longer be regarded as offering unlimited opportunities for exploitation. Governments are now prepared to offer advice and even financial inducements towards securing sound forestry, and in some instances will resort to compulsion.

At the same time efforts are being directed towards raising the status of forest workers and of employees in timber industries. Workers must be admitted to better wage rates, better standards of living, and opportunities for advancement such as can be obtained in other industries. The training of high-grade staffs, of technicians, and of an efficient labor force is seen as a prerequisite of improved forest output and greater yields in wood products.

The International Timber Conference hoped to bring about changes in the European timber situation during 1948 and even to obtain certain improvements during the current year.

When the Timber Sub-Committee of the EECE held its fourteenth meeting in June it considered that the total availabilities of softwood lumber had increased by about 300,000 standards over estimates made earlier in the year. It therefore proposed to raise the existing limits of purchase agreed by individual countries. This proposal has since been accepted, suggesting that the Marianske Lazne Conference has already had some influence on easing the strain which previously existed in Europe.

Recommendations Adopted

SHORT-TERM PROBLEMS

THE CONFERENCE

1. CONSIDERING that the solution of the present shortage can only be found through European solidarity and the application of co-operative measures,

   RECOMMENDS that during the felling seasons 1947/48 and 1948/49 all countries should increase their cutting for production of sawn softwoods by 10 percent; this increased production should result either in increased exports or in decreased imports. Having regard to the special situation of certain countries, it will be open to those countries to achieve the same result by any measures, other than extra cuttings, which they may wish to put into effect, including restrictive measures in use or consumption.

   RECOGNIZES that certain countries will not be able to make the required effort without outside assistance, whether derived from appropriate international organizations or by other means, due to shortages of manpower, food, coal, machinery, credit, and other physical factors.

2. CONSIDERING the considerable strain which supplementary fellings undertaken by European countries will impose on forests,

   RECOMMENDS, therefore, that, to ensure that this effort should not be detrimental to forest resources, European countries should consider in the general framework of their long-term forest policy, the adoption of immediate measures of reforestation and replanting, and should also consider other means of reconstituting their forest resources.

3. CONSIDERING that German aggression is responsible for the reconstruction requirements of countries which have suffered from the war,

   RECOMMENDS that the occupying powers consider the great need in those areas for forest products in determining their cutting schedules.

4. RECOMMENDS that
   (a) member nations should give their close consideration to the suggestion for economy in the use of timber contained in the report of the Technical Subcommittee of this Conference;
   (b) participating nations should also consider the possibility of spreading information amongst construction and wood-consuming industries, workers, foremen, contractors, etc., in order to save timber at all stages from the tree to the finished product;
   (c) member nations should, if they have not already done so, consider the adoption of controls over housing, in order to economize in the available supplies of timber;
   (d) FAO should undertake the collation, codification, and early diffusion of technical information upon all aspects of the economical utilization of timber, in co-operation with all national and international bodies concerned in the various aspects of this subject.

LONG-TERM PROBLEMS

THE CONFERENCE

5. RECOMMENDS the establishment by all countries of rational domestic forest policies based on the wise use of existing forests, reafforestation of cleared land and the afforestation of waste land.
6. RECOMMENDS that the European governments take steps to control fellings not only in forests under State control but also in private forests, with the object of obtaining a sustained and, if possible, increased output. (Adopted by vote of nine to five.)
7. EMPHASIZES the importance of periodical surveys of forest resources and annual felling statistics.
8. URGES the expansion of forest research work, especially as regards tropical timbers.
9. CALLS the attention of governments to the desirability of giving a high priority in their national financial and economic plans to the claims of afforestation, reafforestation, and the improvement of exploitation facilities.
10. RECOMMENDS that FAO, on the request of any individual member government applying for a loan, should call the attention of the appropriate international organizations to the need of international credits for the following purposes:
    (a) the fulfillment of national forest policies (especially reafforestation and afforestation plans);
    (b) the improvement of exploitation facilities;
    (c) the development of new forest resources; and
    (d) technical improvement of forest industries, especially in countries suffering from wartime devastation (including particularly the development of industries manufacturing substitute materials from wood and wood-waste).
11. CALLS attention of the participating governments and of the appropriate international organizations to the importance of:
    (a) assuring security of employment to forest workers;
    (b) establishing wage rates which are comparable to those applying to other occupations allowing for the appropriate differences in general economic circumstances of the various occupations;
    (c) improving the general living conditions of forest workers within the framework of domestic policies of social legislation, equally as regards housing and hygiene;
    (d) providing the necessary technical training facilities for forest workers;
    (e) improving safety measures regarding the risk of accidents; and
    (f) providing educational facilities for the children of forest workers which are in line with the general educational standard.
12. RECOMMENDS that FAO, in consultation with member governments, should investigate the possibilities of international control of forest pests.

13. Recommends that FAO, in consultation with member governments, should investigate the possibilities of including the standard requirements of certificates for forest seeds and plants into a comprehensive international convention on agricultural seeds and plants.

14. Recommends that FAO, in consultation with member governments, should proceed further with the collection and distribution of information regarding technical progress in forest industries.

O. Scrittore and G. Giordano (Italy)

FURTHER PROCEDURE

The Conference

15. Recognizes that the world-wide shortage of timber cannot be solved within the limited framework of timber resources, cuttings, distribution, and consumption, but depends to a very great extent upon the solutions of other economic problems among which are questions of finance, credit, and means of payment, availability of transportation and labor, and interrelation with other commodities such as coal and machinery. Conversely, developments within the field of forest policies and practices, and of the timber trade, influence the solution of other economic problems.

Calls the attention of international organizations such as the Economic and Social Council, the International Bank for Reconstruction and Development, the International Monetary Fund, the Interim Co-ordinating Committee for International Commodity Arrangements, the Economic Commission for Europe, the International Labour Office, etc., to the urgency of the world timber shortage, and

Recommends that whenever appropriate these organizations utilize the technical advice and assistance of FAO in their consideration of economic problems which affect the critical world timber situation;

Further Recommends that the Economic Commission for Europe, with the technical assistance of FAO, should pay special attention to

(a) increasing available timber supplies and decreasing waste of wood in order to help in meeting the needs of European reconstruction;

(b) aiding in reducing economic difficulties mentioned in the resolution on increased production by certain countries, by assisting them in obtaining necessary economic help; and

(c) the satisfactory distribution of available timber supplies.

Note: For the purposes of this resolution timber includes hardwoods, pitprops, railway sleepers, ties, telegraph poles, pulpwood, and plywood.

16. Considering that problems of forests and timber of all European countries and of the non-European countries adjacent to the Mediterranean form a technical whole,

Invites ECE to permit all such interested countries to participate in work in connection with forests and timber.

17. Considering (a) the findings of this Conference with regard to the prospective trend of timber requirements and timber supplies available for consumption in Europe including the Mediterranean area; and (b) the need to fill the prospective gap as soon as and as fully as possible, in order to restore normal economic and social conditions and to achieve a gradual improvement of housing and living standards in this region;

Notes with satisfaction FAO's intention of holding forestry and forest products conferences in other parts of the world with a view to examining the possibilities of developing new forest resources and expresses the hope that all governments having timber resources available for exploitation will take into account the need for expansion of supply.

18. Having regard to the long period required for the development of forest resources and for the fulfillment of domestic rational forest policies;

Considers it desirable that the European countries concerned should meet together from time to time to exchange information and views about their problems in the field of medium- and long-term forestry. FAO under its existing mandate is able to call together consultative committees, and it would seem appropriate therefore that FAO should consider providing such a committee on forestry within its framework. It could meet from time to time as might seem necessary in the opinion of FAO and of the governments concerned acting in close consultation.

C. Vargas, head delegate of Chile

Documents Presented to the International Timber Conference

Report on European Timber Position

By the SECRETARIAT of the EECE TIMBER SUB-COMMITTEE

WITH coal, timber is the most important factor upon which reconstruction in European countries depends, whether used directly, as in housing, or as an ancillary industrial material, as in woodpulp, packaging, containers, etc. Among other important uses, timber for pitprops and railway sleepers is, of course, essential to the European economy.

During the war and until 31 December 1945, the Combined Board in Washington undertook the task of allocating timber among the Allies. When the Emergency Economic Committee for Europe was created in May 1945, it became apparent that the needs of the liberated areas of Europe, as well as of other European countries, would require the EECE to consider emergency measures for the alleviation of the critical shortage in timber supply. Accordingly, in October 1945 the EECE, in agreement with the Combined Boards in Washington, set up a Timber Sub-Committee to take over the activities of a working group which had functioned in London under the auspices of the British Ministry of Supply during the war and which had provided a medium for consultation on the needs and procurement of timber by European countries.

The FAO Annual Conference in Copenhagen, in August 1946, drew attention to the critical world shortage of timber and to the underlying factors of the shortage. It pointed out that the shortage was due not only to deforestation but also to the lack of equipment and skilled manpower necessary for the effective exploitation of the existing resources. Except for small quantities of special quality timbers imported from the United States and Canada, Europe, the U.S.S.R. included, was not only self-supporting before the war but was able to export timber to countries outside Europe, as shown in Table 1 below.

At the present time the war-devastated countries are faced with critical needs of timber, and their minimum requirements cannot be met even by drawing on the sources outside Europe. The Timber Sub-Committee of the EECE consequently undertook to give immediate help to member countries through short-term measures, by bringing together importing and exporting countries in order to adjust requirements so as to bring them within the compass of available supplies.

The following pages review the work of the Timber Sub-Committee and its efforts to aid European countries in meeting their timber requirements from European sources; for, although Canadian exports have made an important contribution towards bridging the gap between European requirements and supplies, no very substantial help from North America and the U.S.S.R. (important prewar sources of supply) could be expected in view of their own increased requirements.

G. Cerf (EECE) and E. Glesinger (FAO) with President Benes

A study of the measures which might alleviate the present critical situation disclosed the following possibilities:

(1) investigation of new sources of supply (tropical sources);
(2) improved exploitation of forests (training of technicians, modern equipment, etc);
(3) improved techniques and economies in the use of timber through
  (a) restrictions in uses (particularly in building);
  (b) technical developments to economize in the use of timber for essential purposes;
  (c) research into substitute materials (including uses of sawmill refuse, shavings, and low quality wood).

While recognizing the great importance of long-term measures such as (1) and (2) above, calling for global consideration, the Timber Sub-Committee has limited itself to the study and solution of short-term problems and to such technical aspects of the problem as given in (3) above. It was clear that, while on the one hand if European production could be increased

TABLE 1.—TIMBER EXPORTS AND IMPORTS OF EUROPE

(In thousand m³ of round wood)

Item	Exports		Imports		Surplus or Deficit	
	1929	1937	1929	1937	1929	1937
Lumber	93,259	88,781	82,817	77,329	+ 10,442	+ 11,252
Pulpwood	31,697	37,972	23,639	26,220	+ 8,058	+ 11,752

fairly rapidly, on the other hand the increase could only bring about effective improvement in the European timber position if the importing countries used every possible device to economize in the use of timber and employed all possible substitutes for timber. In this connection, attention is directed to the work of the Technical Sub-Committee of the EECE Housing Sub-Committee as evidence of the interest of European governments in the problem.

While a review of the work of the Timber Sub-Committee could be set out in a number of ways, it was felt that a survey first of 1946 timber requirements, then of supply and the conditions affecting supply (coal) and, lastly, an evaluation of the 1947 position, would best serve the purpose.

1946 Requirements

The difficulties which faced the EECE member countries at the beginning of 1946 in obtaining their supplies of timber and the uncertainties of supply from traditional sources led Belgium, Denmark, France, the United Kingdom, Norway, and the Netherlands to concert with Canada and the United States in establishing the Timber Sub-Committee of the EECE, in order to explore the problem and determine what measures could be taken to meet minimum requirements. Since the establishment of the Timber Sub-Committee, Czechoslovakia, Poland, Finland, and Sweden have also participated in the work of the Sub-Committee. In view of the still disrupted state of the economies of these countries, it was not possible for the Sub-Committee to consider requirements for specific uses; its investigation in 1946 had to be limited to a comparison of the import requirements of the various countries, without taking into account the importance and quality of indigenous production. It should here be mentioned, however, that in 1947, as a result of the experience gained in 1946, it was possible for the Sub-Committee to extend the scope of its work in this connection as will be seen in the following pages.

The Sub-Committee had to consider European requirements and possible supplies of softwood, hardwood, pitprops, railway sleepers, telegraph poles, and plywood.

1. *Hardwood*

It soon became clear that requirements for hardwood varied greatly with respect to types and specifications and that therefore it would be impossible to set global quotas. On the other hand, the supply to European countries from colonial sources was primarily a question of ocean transport, with which the Sub-Committee was not qualified to deal.

2. *Railway Sleepers*

The supply position in railway sleepers did not appear very critical. On the other hand, the variations from country to country in the uses of hard or softwood, the differences in the specifications called for by various railway companies, which varied not only from country to country but also within the same country (according to the nature of the soil, etc.), made it difficult, if not impossible, to establish quotas for each specific use. It was therefore decided to include railway sleepers as an unspecified part of the total requirements for hardwood (see 1 above) or for softwood (see 6 below).

3. *Telegraph Poles*

The differing standards made it equally difficult to deal separately with requirements and supplies for telegraph poles. The Sub-Committee felt, however, that the supply situation would not become too critical, provided countries did not insist upon too high standards of quality.

4. *Plywood*

An examination of the plywood position indicated an estimated deficit of about 150,000 cubic meters. However, in view of the importance of Brazil as a producer and the uncertain possibilities of supplying the member plywood-manufacturing countries with the necessary raw materials, the Sub-Committee decided to defer examination of this question. It was suggested that it might be reconsidered in 1947.

5. *Pitprops*

In view of the technical considerations relating to the uses of pitprops and the direct connection between requirements for pitprops and the production of coal, it was agreed that the pitprop requirements of European countries should be examined by the European Coal Organization (ECO). (See "Execution of Agreements, D. Actual Imports.")

6. *Softwood*

The problem of softwood was entirely different. Firstly, softwood was a commodity susceptible of general classification which allowed requirements to be stated in a relatively small number of figures; secondly, the limited number of sources of supply and the size of the needs made it a simpler matter to establish a basis upon which distribution could be examined.

This discussion is therefore limited to a consideration of the softwood position of EECE member countries. The term "timber" refers to softwood, unless otherwise specified.

EECE member countries reported their softwood import requirements for 1946 as follows (in thousand standards):

Great Britain	1,500
France	473
Belgium	300
Netherlands	400
Denmark	170
Norway	23
Total	2,866

Total 1946 availabilities as estimated by the Timber Sub-Committee amounted to about 1.4 million standards. (See "1946 Supplies" below.) It was evident therefore that import requirements as stated by member countries could not be met. Two possible courses of action were open: countries could compete for their requirements in a sellers' market which would lead to a rise in prices and cause inequities for those devastated countries whose weakened economies placed them in an unfavorable competitive position; the second course, adopted by the Timber Sub-Committee, was for each country by agreement and through reciprocal concessions to limit its imports from all sources to a global quantity proportionate to the availabilities.

It was proposed and accepted by members of the Timber Sub-Committee that they limit their purchases, as indicated above, to the following countries: Canada, United States, Brazil, Finland, Sweden, Czechoslovakia, the Baltic States, and the Balkans. Imports from the U.S.S.R., even if they proved to be

small, were to be counted within the quotas. Since imports from Germany were still very uncertain, these were left out of the plan for the time being.

1946 Supplies

At the time that the Timber Sub-Committee initiated its study of the softwood supply position in Europe, producing countries such as Finland and Sweden were not as yet participating in the work of the EECE. It was necessary therefore for the Sub-Committee to base its estimates of supply on such information as members could make available. On this basis, the estimate of the 1946 softwood availabilities were as follows (in thousand standards):

Canada	500
Sweden	500
Finland	100
Brazil	20
Czechoslovakia	11
United States	160
U.S.S.R., Balkans, and Baltic States	100
Total	1,391

When Finland and Sweden joined in the work of the Timber Sub-Committee it became apparent that the quantity of timber these countries could make available for export depended in large part on their own supplies of fuel. Thus from the outset of the negotiations with these two countries a correlation of coal and timber was found to exist.

1. *Finland: Fuel position in* 1946

The most critical problem facing Finland was the shortage of good quality fuel, particularly of coal. Timber, which during the war had partially replaced the deficit in coal imports, was not a suitable fuel for certain industries such as electric power production and the steel industry, nor even as fuel for ships used as icebreakers.

In February 1946, when Finland first became associated with the work of the Timber Sub-Committee, it had already begun negotiations with the ECO with a view to participating in the work of that organization and benefiting under its allocation procedures. On 12 February 1946, the Finnish government submitted to the ECO a memorandum on its fuel situation (ECO/APC/99). This document indicated that Finland's yearly average (1936—38) consumption was equivalent to about 3.86 million tons of coal and coke; the 1946 program was based on an estimated consumption equivalent to 4.6 million tons of coal and coke. Prewar imports of coal and coke amounted to about 1.8 million tons; the program for the coal year 1946/47 (1 June 1946 to 31 May 1947) called for imports of 1.9 million tons, or about 160,000 tons per month. On the above basis, Finland was therefore faced with meeting fuel requirements equivalent to 2.7 million tons of coal, principally by consumption of 15 million steres[1] of firewood and timber waste. If these fuel requirements, which Finland estimated as minima, could be met with coal imports, Finland offered to undertake the following export of timber and timber products to European countries:

100 to 150,000	standards of softwood
1,900,000	cubic meters of pitprops
400,000	tons of cellulose
325,000	tons of newsprint
60,000	tons other paper

The Finnish delegate had also emphasized the extra load which would be imposed on the Finnish transport system by the movement of firewood from the interior of the country to coastal districts to cover, so far as possible, the deficit in coal, which normally arrived by sea. Furthermore, reference was made to the fact that any aid Finland might receive to enable her to acquire the necessary equipment and machinery for the exploitation of her forests would in large measure facilitate timber exports.

2. *Sweden: Fuel position in* 1946

The Swedish Government's report to the ECO (21 February 1946 ECO/GEN/7) on its fuel position was similar to that of Finland. It underlined the difficulties that Sweden was encountering in obtaining coal supplies and the considerable influence of these difficulties in Sweden's exports of timber. Her import requirements of coal and coke for 1946 were estimated at about 7 million tons, or about 580,000 tons per month, which Sweden regarded as minima. With total fuel requirements amounting to about 14 million tons, Sweden had to resort to the use of fuels other than coal, notably timber, to provide the equivalent of 4.9 million tons of coal.

Sweden's limited resources in skilled manpower and equipment allowed for the cutting of about 50 million cubic meters of timber during the 1945-1946 season. This maximum quantity had to be divided between requirements of firewood for domestic fuel (as above) and the following exports which Sweden planned to make in 1946:

Softwood	400,000	standards
Chemical woodpulp	1,400,000	tons
Mechanical woodpulp	200,000	tons
Panels	85,000	tons
Papers	380,000	tons
Pitprops	500 to 700,000	steres

3. *Timber-Coal Agreement*

The European Coal Organization examined the foregoing memoranda submitted by Finland and Sweden, with a view to determining how far the stated requirements of these countries could be met. Before making a final reply to the two countries, and having regard to the connection between fuel imports and timber exports which was put forward in these memoranda, the European Coal Organization and the Timber Sub-Committee of the EECE decided to hold a joint meeting in order to prepare a recommendation which could be submitted to Finland and Sweden for their agreement.

A working party (the Timber-Coal Working Party) was accordingly established and met in London at the end of February and again early in March 1946, and was attended by members of the Timber Sub-Committee and of the ECO, and by representatives of the Swedish and Finnish Governments. The Working Party first had to consider the principle upon which it should work. Theoretically, several approaches were possible:

(a) to relate the timber exports to the coal imports of the two countries on the basis of the calorific values of timber and coal respectively (one ton of coal for six steres of timber);

(b) to relate the exchanges of timber and coal by a formula, fixing an arithmetical ratio between coal imports and timber exports;

(c) to consider a more general relation between timber and coal on the basis of reciprocal aid — i. e., if the timber-producing countries made every effort to export maximum quantities to

[1] Piled cubic meters.

the devastated countries of Europe, the latter, members of the EECE and the ECO, would, in turn assist the economic recovery of the timber-producing countries by aiding them with coal.

The Working Party unanimously rejected (a) and (b), because it was felt these were likely to result in serious inequities, as the economic situation in each country was the major factor which should determine the balance to be sought and maintained between the different types of fuel. The approach indicated in (c) was felt to be the only one which was equitable and which accorded with the spirit of co-operation upon which the work of the EECE was based.

After discussion, during which comparisons were made between the total prewar coal imports of these two countries and the quantities which the ECO could make available, the Timber-Coal Working Party recommended that the ECO make allocations of coal to Finland and Sweden during 1946 to bring total availabilities to the following amounts:

Finland		840,000 tons for the year,
	or	70,000 tons per month.
Sweden		3,600,000 tons for the year,
	or	300,000 tons per month.

These figures were to include imports from all sources (ECO allocations and bilateral agreements). Both Sweden and Finland agreed to these recommendations and promised to do their utmost to export the following quantities of timber in 1946:

	Softwood	*Pitprops*
Finland	100,000 standards	1,200,000 cu. meters
Sweden	400,000 standards	333,000 cu. meters

In July 1946, Finland informed both the Timber Sub-Committee and the ECO that it could make available additional quantities of timber for export if its coal allocation could be somewhat increased. A meeting was called of the Timber-Coal Working Party on 24 July 1946 to consider the Finnish offer to export an additional 75,000 to 90,000 standards of softwood and 450,000 cubic meters of pitprops, if its coal availabilities were raised from 70,000 to 100,000 tons per month. In view of the benefits which would accrue from these additional timber availabilities, the Working Party recommended that Finland's coal be increased as requested, and the ECO subsequently approved this recommendation.

4. *German Exports of Timber in 1946*

As indicated above, imports of timber from Germany were not included in the quotas to which purchases in 1946 were to be limited since, at the time these quotas were agreed to, it was not anticipated that any appreciable quantities of either softwood or pitprops would be available for export from Germany. It is appropriate to set out here the conditions under which exploitation of the German forests in the British and French zones has been and still is carried out.

German production can be divided into two groups:

(a) production by German firms with their own personnel and equipment;

(b) production by other countries (which may or may not be the controlling power of the zone), in cutting areas allotted to them, with their own manpower, equipment, transport, and maintenance.

Production from the cutting areas in the German Zones of Occupation allotted to neighboring countries is destined for the sole use of those countries; they may take out, as availabilities permit, softwoods, pitprops, firewood, etc. Production carried out by German firms is earmarked for German consumption, interzonal exchanges, and eventually exports.

This distinction, which was academic in 1946, became extremely important in 1947 when, the timber situation having become somewhat clarified, the quantities produced in the cutting areas of Germany allotted to different countries are now considered as part of the indigenous production of the respective exploiting countries. This is logical since exploitation in the cutting areas is carried out by means of equipment and material brought in from the exploiting countries.

(a) French Zone

Exploitation is carried on by the French Government with equipment provided from France. In addition, about 92,000 standards of softwood and 25,000 cubic meters of pitprops, produced with German equipment and representing a surplus over German consumption requirements, have been exported to France.

(b) British Zone

The British Government does not directly exploit the cutting areas in its zone, but places at the disposal of the zonal authorities and local concerns equipment sent in from England. This explains why the British Government reserved for itself the entire exportable surplus, which in 1946 amounted to 30,000 standards of softwood and 35,000 cubic meters of pitprops.

(c) American Zone

The United States itself does not import timber cut in Germany. In June 1946 the American occupation authorities concluded a contract with the British Government for the export of 28,000 standards to the United Kingdom. Subsequently, a contract was concluded with the Netherlands for 5,000 standards of softwood. Transport difficulties were the chief obstacle in the fulfillment of these contracts. However, since the contracts did not limit deliveries to a particular date, undelivered portions are being carried forward into 1947. Actually, very small quantities were delivered in 1946.

5. *Allocations by Sources of Supply*

Once the import quotas had been agreed upon, the Timber Sub-Committee was faced with the need to consider distribution according to sources of supply, since the probabilities of effective delivery varied considerably from one source to another. The Timber Sub-Committee recommended that, insofar as possible, each country be apportioned the same percentage share from a given source as was represented by their import quota in relation to total availabilities. Thus for softwood the following percentages were arrived at:

United Kingdom	54	Netherlands	17
Belgium	8	Denmark	7
France	12	Norway	1

This recommendation was approved by the EECE and was transmitted to the governments of the producing countries.

Execution of Agreements

The negotiations undertaken under the supervision of the Timber Sub-Committee and the recommendations subsequently agreed to were closely followed by the Sub-Committee during their implementation,

making it possible to summarize the situation at the end of 1946.

A. *Finland*

As indicated above, the European Coal Organization had agreed to allocate to Finland a monthly supply of 70,000 tons of coal, later increased to 100,000 tons. Actual imports of coal and coke by Finland under the agreement were as indicated in Table 2.

TABLE 2.—FINNISH COAL IMPORTS IN 1946
Monthly average 1935-38—145,094 tons;
monthly average 1946—80,357 tons.

Month, 1946	ECO Allocation	Bilateral Agreements	Monthly Total	Cumulative Total
April	15,247	55,362	70,609	70,609
May	10,427	64,283	74,710	145,319
June	43,059	66,080	109,139	254,458
July	39,345	62,738	102,083	356,541
August	63,091	37,206	100,297	456,838
September	62,206	28,498	90,704	547,542
October	35,576	42,497	78,073	625,615
November	21,427	33,086	54,513	680,128
December	8,436	34,643	43,079	723,207

As previously indicated, Finland had agreed to supply a total of 175,000 to 190,000 standards of softwood and 1.65 million cubic meters of pitwood. Actual exports were as presented in Table 3. (See TSC|46|55—dated 15 November 1946.

TABLE 3.—FINNISH TIMBER EXPORTS IN 1946

Country	Sawn Softwood	Pitprops	
		Sold	Shipped
	standards	*steres*	*percentage*
United Kingdom	90,000	978,560	72
Netherlands	12,000	48,928	45
Belgium	11,000	458,700	88
France	4,000	12,232	100
Denmark	48,000		
Norway	5,000		
Switzerland	4,500		
Sweden			
Other European countries	2,000	18,948	
TOTAL	176,500	1,517,368	

The foregoing shows that Finland was able to more than meet her engagements under the timber-coal

TABLE 4.—SWEDISH EXPORTS OF SOFTWOOD LUMBER, 1946[1]

Destination	Sawn Goods, Deals, Battens, Boards, Scantlings	Planed Goods, Boards	Box-Boards, Sawn and Planed	Laths, Staves, Mouldings etc.	Ends (Fire-wood)	Total Softwood Lumber			
	Jan.-Dec. 1946	Jan.-Dec. 1946	Jan.-Dec. 1946	Jan.-Dec. 1946	Jan.-Dec. 1946	Jan.-Dec. 1946		Jan.-Dec. 1945	
						Europe	Others	Europe	Others
Norway	19,242	4,229		187	5	23,663		18,689	
Denmark	22,825	4,975		379		28,179		84,983	
Faroe Islands								439	
Iceland	2,338	282	10	6		2,636		4,607	
Germany									
Netherlands	58,733	40	47	1,778	747	61,345		74,682	
Belgium	12,981			171	68	13,220		18,332	
Great Britain	161,905	19,011	13,812	2,760	479	197,967		328,422	
Ireland	2,229	260	754			3,243		941	
Northern Ireland			108			108		51	
France	14,165	252		61		14,478		19,996	
Spain	1,666					1,666		593	
Portugal	525					525		965	
Greece	8,325	42	1,058			9,425		2,110	
Others	5,658	2	16	59		5,735		22	
Egypt	3,478						3,478		1,217
Tunisia	263						263		807
Algeria	705						705		1,495
Morocco	110						110		711
French West Africa									
Union of South Africa	10,663	2,296	4,498				17,457		6,290
Portuguese West Africa	441	174					615		
Madagascar	308	61					369		
Other African countries									16
Syria and Cyprus	783	45					828		317
Palestine	472		3,325				3,797		735
India		72	103				175		
Other Asiatic countries	385	269	43				697		
North America									7,364
Central America									
South America	31	995					1,026		2,616
Australia	157	209					366		
New Zealand									
Others									
Totals	328,388	33,214	23,774	5,401	1,299	362,190	29,886	554,832	21,568
Jan. Dec. 1938	459,027	131,877	52,681	32,595	9,615	685,795			

[1] Figures in Petrograd standards (true measure provisory figures from Customs returns in m³ converted in the proportion of 1.672 m³ = 1 standard.

SOURCE: *The Swedish Timber and Wood Pulp Journal*, No. 3, 1947.

agreement. On the other hand, the coal crisis which occurred throughout Europe towards the end of 1946 had its repercussions in Finland with the result that the monthly coal allocation of 100,000 tons agreed to by the ECO in the spring of 1946 could not be fulfilled.

B. *Sweden*

As regards the Swedish coal allocation, it had been agreed that this should amount to 300,000 tons a month. In turn, Sweden agreed to export 400,000 standards of softwood and 500,000 steres of pitprops a year.

TABLE 5.—SWEDISH COAL IMPORTS IN 1946
Monthly average 1935-38—654,271 tons;
monthly average 1946—318,285 tons

Month, 1946	ECO Allocation	Bilateral Agreements	Monthly Total	Cumulative Total
April	82,669	153,310	235,979	235,979
May	72,918	262,329	335,247	571,226
June	86,818	224,749	311,567	882,793
July	104,278	187,456	291,734	1,174,527
August	152,924	228,693	381,617	1,556,144
September	99,586	244,776	344,362	1,900,506
October	113,146	286,770	399,916	2,300,422
November	82,251	236,105	318,356	2,618,778
December	66,396	179,392	245,788	2,864,566

It appears from Table 4 and Table 5 that Sweden received more coal (averaging 318,285 tons per month) than had been allocated to her and that, if total Swedish exports amounted to 400,000 standards, Europe's portion of these exports amounted to 362,190 standards. Pitwood exports, on the other hand, totalled 230,345 cubic meters according to the same source of information as that for Table 4, the full amount being distributed in Europe as follows:

Great Britain	133,157 m^3
Netherlands	96,585 m^3
Other European countries	612 m^3
Total	230,354 m^3

C. *Canada*

Canadian exports in 1946 are given in Table 6 and compare with 500,000 standards expected. (See "1946 Supplies.")

D. *Actual Imports*

1. *Softwood*

As indicated, timber exports from Sweden and Finland were in some instances somewhat different from what had been foreseen and, on the whole, European countries were unable to purchase the total quantities to which they had agreed to limit their imports. (See Table 7.)

TABLE 7.—SOFTWOOD IMPORTS 1946

Country	Agreed Quotas	Imports 1946	Percentage of Realization of Quotas
Great Britain	832,000	810,000	97
Belgium	123,000	60,500	61.8
Netherlands	260,000	124,500	63.7
Denmark	104,000	100,000	98
Luxembourg	(1)	3,040	
Switzerland	(1)	24,400	
France	189,000	165,000	87.3
Italy	(1)	19,000	
TOTAL	1,508,000	1,306,440	Average 81.6

[1]As these countries did not take part in 1946 discussions, no quota was fixed.

2. *Pitwood*

As regards pitwood, actual imports during 1946 of the various member countries of the ECO are as shown in Table 8 below.

To sum up, the Timber Sub-Committee's estimates for 1946 proved to be overoptimistic, the quotas which had been accepted by member countries totalling approximately 1.5 million standards, whereas the actual imports which were realized by the European countries amounted to about 1.3 million standards. Countries such as Belgium and the Netherlands who had taken into account their reconstruction needs in establishing their requirements, were only able to import a small percentage of their quotas. Consequently, their initial consumption was reduced in 1946 through lack of supplies. This fact must be borne in mind since it indicates that 1946 cannot be considered as a basis of comparison in 1947.

TABLE 6.—CANADIAN EXPORTS TO EUROPE IN 1946

Country	Logs		Sawn Goods		Square Timber		Railway Sleepers		Total	Pitprops	
	1,000 std.	*M. F. B. M.*	*1,000 std.*	*M. F. B. M.*	*1,000 std.*	*M. F. B. M.*	*1,000 std.*	*M. F. B. M.*	*Standard*	*m^3*	*cords*
United Kingdom	5,894	11,788	352,421	704,842	2,340	4,680	5,110.5	10,221	365,765.5	863,000	357,000
France	408	816	6,992.5	13,985					7,400.5		
Netherlands	23	46	5,503	11,006	504	1,008			6,030		
Belgium			1,761.5	3,523					1,761.5		
Ireland			11,273	22,546	126.5	253			11,399		
Malta			1,344.5	2,689					1,344.5		
Denmark			159.5	319					159.5		
Iceland			1,669	3,338					1,669		
Greece			419	838					419		
Germany			3,000	6					3,000		
TOTAL	6,325	12,650	384,343	763,092	2,970.5	5,941	5,110.5	10,221	398,948.5	863,000	357,000

NOTE: 2,000 Board Feet = 1 standard.

TABLE 8.—PITWOOD, 1946

Import Data	Belgium	France	Netherlands	United Kingdom	Total
Total consumption	970	2638	171	2291	6070
Indigenous production	933	3076	25	1041	5075
Imports less exports	690	—10	246	1983	2909
Increase of stocks	653	428	100	733	1914

1947 Requirements

A. *Softwood*

In September 1946, the Timber Sub-Committee requested member countries to supply information which would allow it to determine the importance of their requirements for softwood and pitwood. The Sub-Committee drafted a questionnaire (TSC[46]35 Revised) asking countries to indicate their cutting programs for 1947, import requirements, and stocks on hand. This questionnaire also called for detailed information on consumption requirements by end uses, such as housing and construction, industry, packaging, shipbuilding, etc. The questionnaire called for corresponding figures for 1946, in order to provide a basis of comparison for 1947. The replies received were circulated to members of the Sub-Committee, under reference TSC(46)51 and appendices. Space does not allow for a detailed analysis of the reports submitted by the different countries, but the substance of these reports is embodied in Table 9.

A comparison of the figures shows that, in general, requirements for 1947 represent about 141 percent of 1946 consumption. Furthermore, if the estimated requirements for 1947 are compared with 1946 quotas, the difference is still greater, since the stated requirements for 1947 are on an average almost double the quotas for 1946.

As indicated in "1946 Supplies" below, the decrease in the indigenous production of most of the importing countries increases import requirements still further. As shown in column 8 of Table 9, these import requirements total approximately 3 million standards—a figure far above the 1.3 million standards actually imported by these countries in 1946.

The members of the Timber Sub-Committee were thus faced with the problem of establishing for 1947 a system of allocation similar to that of 1946. In 1947, however, the Sub-Committee had at its disposal more accurate and complete information on the requirements of European countries and could therefore take into account not only total import requirements but the total domestic consumption requirements of each of the member countries. On the basis of information on past requirements and on estimates for the future, the Sub-Committee first attempted to arrive at allocation formula.

Several formulas were proposed. Among these Formula A was based on the stated requirements of each country for 1947. The total of these requirements was then reduced to bring it into line with estimated availabilities. This formula, based solely on stated requirements, provided no checks on the basis upon which requirements were calculated and would have benefited those countries which had stated their requirements on a high basis, with consequent hardship on those countries which had calculated their requirements on a more austere basis, and it was therefore not unanimously acceptable to the Sub-Committee.

The Sub-Committee then proposed Formula B, which was based on 1946 consumption; but this formula was not acceptable to those countries, in particular Belgium and the Netherlands, who had not obtained in 1946 the quantities allocated to them at the beginning of the year. As a result of deficits in their imports their internal consumption had had to be greatly curtailed and they were, naturally, opposed to having their unfortunate experience in 1946 used as a basis for 1947 allocations.

Formula C, a compromise based on an average of the figures in Formulas A and B, was also rejected; it was again opposed by countries who had been unfortunate in 1946 and who were unwilling that 1946 imports should have any influence whatsoever upon import quotas for 1947.

The Sub-Committee was therefore forced to adopt a purely empirical method of allocating imports for the purpose of reaching unanimous agreement. After considerable discussion, the following import quotas were accepted (in standards):

Great Britain	1,122,000
France	200,000
Netherlands	210,000
Belgium and Luxembourg	147,000
Denmark	103,000
Italy	117,500
Switzerland	47,500
Total	1,947,000

All countries agreed to these quotas. However, recognizing the difficulties which existed as to delivery

Table 9.—Timber Situation, 1947 (Importing Countries)
In thousand standards

Country	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Indigenous Production			Stocks within National Boundaries			Import Requirements			1946	Consumption	Estimated Use		
	1946	1947	Variation	1 Jan. '46	1 Jan. '47	Variation	1946	1947	Variation	Agreed Quota	1946 1+6+7	1946	1947	Variation
Great Britain	89.0	50.0	—39.0	550.0	275.0	—275.0	810.0	1,671.0	+861.0	832.0	1,174.0	1,204.0	1,571.0	+371.0
Belgium[1]	24.0	30.0	+6.0	20.0	10.0	—10.0	60.5	220.4	+159.9	123.0	94.5	94.5	250.4	+155.9
Netherlands[2]	5.0	35.0	+30.3	43.0	15.4	—27.6	124.5	330.0	+205.5	260.0	157.1	128.3	365.0	+236.7
Denmark	50.0	50.0	—	53.0	30.0	—23.0	100.0	142.0	+42.0	104.0	173.0	168.0	192.0	+24.0
Luxembourg[3]	6.5	4.5	—2.0	—	.4	—	3.0	5.4	+2.4	—	—	8.2	9.9	+1.7
Switzerland	240.0	170.0	—70.0	—	38.0	—	24.4	68.6	+44.2	—	—	264.0	238.6	—25.4
France[4]	700.0	600.0	—100.0	78.0	100.0	+22.0	165.0	455.0	+290.0	189.0	843.0	843.0	1,055.0	+212.0
Italy	300.0	[5]250.0	—50.0	150.0	214.0	+64.0	19.0	175.0	+156.0	—	255.0	255.2	500.0	+244.8
Norway	300.0	375.0	+75.0	—	110.0	—	25.5	22.0	3.5	—	—	275.0	—	—
TOTAL	1,714.5	1,564.5	—150.0				1,331.9	3,089.4	+1,757.5	1,508.0		3,240.0		

[1]Belgian indigenous production includes timber cut in Germany to the extent of 4,000 standards in 1946 and 10,00 standards in 1947.

[2]Including timber cut in Germany to the extent of 4,100 standards in 1946 and 34,300 in 1947

[3]Including 1,020 standards cut in Germany by Luxembourg manpower.

[4]Including timber cut in Germany (with French personnel and equipment).

[5]This figure is the figure supplied for the Italian Government by the Working Party, which is planning an indigenous production of 115,000 standards and a drain on stocks of 65,000 standards for 1947.

from the various producing countries, as well as differences in price and quality, the Timber Sub-Committee felt that it would be more equitable to complete these allocations by a further allocation by sources of supply. This distribution by sources, shown in Table 10, was transmitted to the governments of both the producing countries and the exporting countries with the following recommendation:

"The Timber Sub-Committee

"1. *Resolves*

that between now and the next meeting of the Timber Sub-Committee, to be called early in April, the importing countries

(a) will not contract for more than 90 percent of their total import quotas, and

(b) will not contract for more than the quantities shown in the attached table from each producing country; and

"2. *Recommends*

that exporting countries should make every effort to export the quantities shown in the table, and to give special attention to the needs of Belgium, the Netherlands, and Italy, whose requirements are especially urgent by reason of shortfalls in 1946 and unavoidable delays in starting their reconstruction programs.

"In view of the need for early implementation of this resolution, members of the Timber Sub-Committee are invited to bring this resolution to the immediate attention of the appropriate authorities of their respective Governments."

14 March 1947

It should be noted that the total exports as given for each of the producing countries included both the "reasonably certain" as well as "possible additional" exports as estimated by the Sub-Committee and as shown in "1947 Supplies."

In accordance with the previous agreement between the EECE and the ECO as to the division of the work between these two organizations, the EECE communicated the pitprop availabilities, to the ECO, who themselves made allocations. It should be noted that the allocations cover only about 50 per cent of the estimated import requirements.

B. *Pitprops*

The 1947 requirements for pitprops of European countries, collated by the European Coal Organization are as shown in Table 11.

TABLE 10.—DISTRIBUTION OF TIMBER BY SOURCES OF SUPPLY RECOMMENDED AT THE TWELFTH MEETING OF THE TIMBER SUB-COMMITTEE

In thousand standards

Supplying Country	United Kingdom	Belgium	Netherlands	Denmark	Switzerland	France	Italy	Norway	Total
Sweden	200	35	60	35	10	30	22	8	[1]400
Finland	90	20	25	55	5	15	10	5	225
Czechoslovakia		12	[2]25		5		5		47
Germany									
U.K. zone	150								150
U.S. zone	[2]142		[2]28						170
French zone						118			118
Austria					12		40		52
Canada	400	25	[2]50	2	5	20			502
United States	90	[3]25	10	2	5	15	10		157
Others[4]	50	[5]30	[6]12.5	[7]9	5.5	2	30 5	[8]5	144.5
Total	1,122	147	210.5	103	47.5	200	117.5	18	1,965.5

[1]It has been announced by Sweden since this table was prepared that the availability for 1947 is at the moment 300,000 standards including softwood, boards, railway sleepers, pre-fabricated houses, and other plane goods. Some other availabilities may be announced later.

[2]Firm contracts.

[3]Against which quantity Belgium has placed firm contracts for 11,000 standards for the first quarter.

[4]Including Brazil, Hungary, Portugal, Roumania, Yugoslavia, U.S.S.R., etc.

[5]Including 10 from U.S.S.R.

[6]Including 5 from Portugal.

[7]Some of this might be contracted by Denmark in Czechoslovakia.

[8]From the U.S.S.R.

TABLE 11.—PITPROP REQUIREMENTS 1947

In thousand m³

Data	Belgium	France	Netherlands	Turkey	United Kingdom	Total
Forecast of total consumption	1,252	3,000	243	197	2,568	7,260
Requirements for stock readjustments	—184	334	—15	24	—360	—201
Forecast of indigenous production	400	3,112	0	123	272	3,907
Net imports (recommended allocations—exports)	550	153	198	40	1,644	2,585
Forecast of deficit at end of year (1+2)—(3+4)	118	69	30	58	292	567

NOTE: The requirements for stocks necessary to bring the stocks at the end of the year at a level sufficient to cover six months of consumption.

TABLE 12.—1947 PITPROP ALLOCATIONS
In thousand m³

Exporting Country	Importing countries: Belgium	France	Netherlands	Turkey	United Kingdom	Total
Finland	400	20	80		600	1,100
Sweden	20	30	50	40	150	290
Norway					67	67
Czechoslovakia		25				25
TOTAL	420	75	130	40	817	1,482

NOTE: The above figures have been taken into account in order to establish the figures in line 4 of Table 9.

1947 SUPPLIES

A. *Softwood*

The softwood supplies of European countries in 1947 will be available from: (1) the indigenous production of importing countries, and (2) imports from abroad.

Estimates of supplies available to the importing countries from the various producing countries as given in Table 13 are more or less precise; these are classified under two categories—"Reasonably Certain" and "Possible Additional."

Total availabilities, reasonably certain and possible additional, are estimated at 1.95 million standards and cover the import quotas mentioned in the preceding section to which all the European countries agreed. These allocations may seem optimistic, since they take into account not only reasonably certain availabilities but also possible additional imports which may become available during the year. Nevertheless, the Timber Sub-Committee felt that this was the most reasonable and, in fact, the only possible procedure, given the importance of the requirements on the one hand and, on the other, the possibility that export availabilities may have been estimated in certain cases on a somewhat overconservative basis.

B. *Pitprops*

As regards pitprops, the only figures available at this time with respect to exports are those indicated by the Timber Sub-Committee to the ECO for allocation as described in the previous section. Availabilities of pitprops for export in 1947 are stated as follows (in thousand cubic meters):

Finland	1,100	
Sweden	290	(as estimated by EECE and ECO)
Norway	67	
Czechoslovakia	35	
Luxembourg	145	
Austria	100	
Canada	640	
Total	2,277	

[1]This quantity has not been allocated, in view of the bad condition of the wood due to embedded shell fragments.

These quantities do not include certain exports under bi-lateral agreements, principally from France, Switzerland and the U.S.S.R.

TABLE 13.—SOFTWOOD SUPPLIES—1947
In thousand standards

Country	Indigenous Production	Imp for EECE Countries: Reasonably Certain	Possible Additional
United Kingdom	50		
Belgium[1]	30		
Netherlands[1]	35.3		
Denmark	50		
Switzerland	170		
France[2]	600		
Italy	[3]250 [3]75		
Sweden		300	100
Finland		200	
Czechoslovakia		40	
Germany:			
British Zone		150	
American Zone		170	
French Zone		[4]64	[4]54
Austria		20	22
Brazil		4	4
U.S.S.R.		50	50
United States		120	40
Canada		450	50
Others			25
TOTAL	1,260.3	1,568	345
ROUND TOTAL	1,300	1,600	350

[1]Includes timber cut in British and French zones of Germany with labor and equipment from the recipient country.

[2]Includes timber cut by French manpower in the French zone of Germany.

[3]These figures are those proposed by the Timber Sub-Committee to the Italian Government, which agreed to raise its indigenous production to 115,000 standards and to draw 65,000 standards from stocks.

[4]Consists of timber to be cut in the French zone of Germany by German labor.

PROGRAM OF WORK OF THE TIMBER SUB-COMMITTEE

A. *Packaging*

In the course of examining the detailed requirements for 1947 of the member countries, the Timber Sub-Committee noted that one of the most important uses of timber was for packaging. Not only is this use

TABLE 14.—TIMBER REQUIREMENTS FOR PACKAGING

Country	Use 1946	Requirements 1947: *Standards*	Increase	Increase: *Percentage*
United Kingdom	139,000	203,000	64,000	46
Belgium and Luxembourg	10,000	30,400	20,400	204
Netherlands	22,475	41,000	18,525	82.4
Denmark	35,000	40,000	5,000	14.3
Switzerland	64,200	61,000	(—3,200)	
France	82,000	115,000	33,000	40.2
Italy	77,000	192,000	115,000	149.3
TOTAL	429,675	682,400	252,725	Average 58.8

of timber important as to the quantities used (see Table 14) but the actual uses themselves are important, inasmuch as they apply to the export of a large number of essential goods, notably agricultural products.

At its Eleventh Meeting the Timber Sub-Committee considered the possibility of establishing a special sub-committee to deal with the problems of packaging. In view of the technical nature of the problem, involving as it does such general problems as commercial regulations, standardization, and substitute materials, the Timber Sub-Committee did not consider itself competent to deal with the matter and referred the question of the establishment of a special sub-committee to the main committee of the EECE. The main committee is to give consideration to this question, which has already been the subject of wide study by the Packaging Bureau of the International Chamber of Commerce, and by the British Standards Institution, as well as by the International Organization for Standardization. In exploring possible economies in the use of timber for packaging, the EECE approach to the problem will necessarily differ from that of the foregoing organization; the emphasis of the latter is on standardization of materials used, whereas the EECE's interest lies in economies in the use of timber.

B. *Wood Pulp*

Among the timber products which play an important part in the industrial life of European countries is wood pulp, which *inter alia* can be used as a substitute for timber in packaging. The great number of uses of wood pulp in industry would call for a special study of sources of supply, requirements, and measures which might be taken in order to assure equitable distribution of products having a cellulose base. The essentially industrial character of wood pulp production was stressed, as wood pulp is the primary product from which stem a great variety of uses, ranging from newsprint to the complex products of organic chemistry.

Conclusion

This brief review of the action undertaken by the EECE, and in particular by its Timber Sub-Committee, does not purport to be an exhaustive study of the timber supply problem in Europe or of all the possible measures for alleviating the critical timber situation. Nevertheless, from the reports submitted to the Timber Sub-Committee and the work undertaken in this connection by the other sections of the EECE and its Secretariat, it is reasonable to conclude that it would be rash to base too much hope on any substantial increase in exports from those countries which are presently exporting large quantities of timber. The U.S.S.R. which supplied no exports in 1946, may be the only country in Europe potentially capable of providing considerable supplies of timber for the European market.

The potential contribution to European supplies from new sources outside Europe remains a highly controversial matter, but must be given consideration in any long-term approach to the timber problem.

Although it is now difficult to foresee any substantial and rapid increase in timber supplies available to European countries, there remains the possibility, through the practice of strict economies in the producing as well as the importing countries, at the same time of increasing export availabilities and thus lessening the gap presently existing between requirements and supplies. It is to be hoped that the investigations which have been undertaken by the majority of the importing countries with respect to timber may lead, among other things, to a wider use of low quality woods which up to now have been restricted to limited purposes, such as packaging, as well as broader use of products manufactured from wood waste. In this connection the EECE, and in particular its Housing Sub-Committee, is at present considering action which may lead to the general adoption of technical processes which may effect appreciable economies in the use of timber for housing.

In general, the study of substitute materials, particularly of products based on wood waste, is a matter of first importance to all European countries. However, the present scope of work of the Timber Sub-Committee has not permitted a study of the processing possibilities of wood waste, and the highly technical character of the problem has prevented its study elsewhere by the EECE.

All countries and individuals are fully aware through direct experience of the critical shortage of coal, but the shortage of timber can itself become a dominant factor in retarding the reconstruction of the devastated areas. In fact, the shortage of timber will already be more critical, as requirements are considerably in excess of 1946 consumption.

A certain correlation between the supply of coal and timber availabilities has been noted. In the first place, for small quantities, principally for heating purposes, there is the possibility of substitution. Furthermore, coal, which has a direct influence upon the level of industrial production, affects agricultural production in general and forestry in particular, less directly, and the relation between coal and timber is obviously less important than that between coal and steel, for example.

Forestry in the United Kingdom

By the UNITED KINGDOM DELEGATION

VOLUNTARY returns at the outbreak of war in 1914 gave the approximate area of woodland in Great Britain as 2,752,500 acres (1,113,900 ha.), less than 3 percent of which was under the control of the State and public authorities.

The 1924 Census classified the woodland more carefully into two broad categories: a) Economic or Potentially Productive—2,754,379 acres (1,114,661 ha.), and b) Uneconomic—204,293 acres (82,675 ha.). The Potentially Productive Woodland was further subdivided into High Forest, 1,416,890 acres (573,397 ha.); Coppice, 528,680 acres (213,950 ha.); Scrub, 330,703 acres (133,831 ha.); and Felled or Devastated, 478,106 acres (193,483 ha.). The total woodland area in the United Kingdom was returned at 2,958,672 acres (1,197,336 ha.) or 5.3 percent of the total area of the country.

Prior to 1914, the United Kingdom was almost wholly dependent upon imported timber supplies. During the 1914-18 war, imports had to be drastically reduced and home resources exploited to the maximum extent. Between 1915-19 some 450,000 acres (182,000 ha.) of the best of the home-grown stands, young and old alike, were cut down.

The results of this drastic action were felt throughout the interwar period and fellings continued at a rate above the annual increment—total annual fellings immediately before the 1939-45 war were estimated at 45 million cubic feet (1.3 million m^3) per annum, indicating a yield of only 15 cubic feet per acre (1.1 m^3 per ha.) ,which was nevertheless higher than the annual rate of increase.

Quite obviously the time between the two wars was insufficient in which to make good the depletion caused in 1914-18, or to establish the proper age-class distribution.

Forestry Policy during the Inter-War Period

In 1919 the Forestry Commission was set up under the Forestry Act and a State Forest Service came into being. The long-term objective was to afforest 1,770,000 acres (716,000 ha.) of land unplanted over a period of 80 years and at the same time to take steps to secure an increased yield from 3 million acres (1.2 million ha.) of private woodland which existed in 1914.

The immediate objective, a ten-year installment of the full plan, was to afforest 150,000 acres (61,000 ha.) by direct State action, and by State assistance to private owners to secure the reafforestation of a further 110,000 acres (44,517 ha.). The program included other ancillary work, chiefly in the direction of research and education.

By 1929, State and State-aided plantings amounted to 215,015 acres (87,014 ha.). By 1939, the total of State plantings had increased to 368,878 acres (149,280 ha.), and 125,862 acres (50,935 ha.) had been planted by private owners with the aid of State grants, making a total of 494,740 acres (200,215 ha.) of afforestation and replanting since the end of the 1914-18 war.

H. J. Hutchinson, head of United Kingdom delegation

Developments during the 1939-45 War

When war broke out in 1939 plans had been laid to exploit the remaining British woodlands and fellings commenced without delay, to continue throughout the war years without thought for the future. To win the war was the only consideration and the timber felled was equivalent to 18 million shipping tons (18.3 million metric tons). The stands sacrificed included all classes of timber — softwoods and hardwoods — and owing to the vital need for the production of coal and for other services, no regard could be taken of age or species, the consequence being the wholesale sacrifice of young plantations to provide pit-props and poles, and of older stands for saw timber.

The full extent of the acreage sacrificed is not yet known but it is certain that not less than half of the growing stock remaining in 1939 has gone. Unfortunately, owing to the serious European shortage of timber supplies, felling at a most extravagant and disastrous rate has still to be continued; current fellings are now mostly hardwoods, resources in home-grown softwood being practically exhausted. Unless adequate supplies of foreign timber are obtainable for importation, the remnants of the forest stands in Great Britain are bound to disappear. As it is, even if indiscriminate felling can speedily be brought to a stop, there is little prospect of obtaining from home sources more than 2 percent of very large future requirements.

It is therefore an urgent duty to conserve the exiguous growing stocks that remain in Great Britain and to replant and reafforest as quickly as possible.

Postwar Forestry Policy

The United Kingdom Government recently published the Forestry Commission's plans for a future forestry policy. The "desirable program" advocated is to afforest 3 million acres (1.2 million ha.) of bare land and to replant 2 million acres (800,000 ha.) of existing woodland, thus to provide a total of 5 million acres (2 million ha.) of systematically managed forest. The time allowed for this work is 50 years. Pro-

vision is also made for increased scope for research, education, and publications.

The government has now approved this plan in principle and has authorized a five years' installment for which the sum of 20 million pounds has been earmarked. In regard to private woodland, the Forestry Commission is instituting a system of "dedication" whereby in return for State aid the owner will undertake certain obligations and the land will henceforward be dedicated to the growing of timber as a first consideration.

This task presents considerable difficulties of organization. The necessary technical and administrative staffs are being trained and appointed as quickly as possible, land for afforestation is being acquired, and supplies of transplants are being raised. The State planting program for the current season is 30,000 acres (12,000 ha.) and the area to be planted annually is to be increased sharply to 125,000 acres (50,000 ha.) in the seventh year of the first decade.

The United Kingdom has been an importer of timber from early medieval times and is now the largest importer of all importing nations. The rapid increase of population in the nineteenth century and after tended enormously to intensify dependence upon imports which had grown to 95 percent of total consumption by 1939. Unless and until the Forestry Commission's "desirable program" is well under way, reliance upon imports will inevitably be still more complete. In the meantime, excessive fellings of home timber must cease immediately or none will be left.

As a contribution to victory the British woods have been ruthlessly exploited without regard to future supply or the principles of forest management for which foresters of all nations stand. None other of the belligerent nations has suffered comparable sacrifice of forest resources. Henceforth the woodlands must be managed as perpetually renewable crops and reasonable requirements met from overseas.

The United Kingdom will gladly cooperate in the world-wide task of bringing forestry practice to its proper level in the service of mankind.

Parana Pine—A Source of Wood for Reconstruction in Europe

By TOM GILL

Member of the FAO Standing Advisory Committee for Forestry and Forest Products

THE Interim Committee on Forestry and Forest Products of FAO in many of its discussions and several of its reports stressed the need for a source of wood supply that might be exploited in time to be of use in the rehabilitation of Europe. Among the possibilities mentioned were Alaska, Siberia, and the Parana pine region of Brazil.

Later this was discussed by ad hoc committees, and still later by the Standing Advisory Committee on Forestry and Forest Products. The consensus of opinion was that the Parana pine, *Araucaria angustifolia* (Bort.) O. Kuntze, seemed to offer the best opportunities for meeting the emergency situation in postwar Europe.

At the Oslo meeting of the Standing Advisory Committee in August 1946, Lyle F. Watts proposed that a mission be sent to Brazil to investigate these possibilities and suggested as a preliminary measure that Tom Gill, member of the committee representing Latin America, gather together information on Parana pine.

This report is in response to Mr. Watts' request. It is a digest of data received in the course of several months' correspondence. The material includes letters and field notes from foresters familiar with the Parana pine region; a report by the Commercial Attaché of the United States Embassy in Brazil; a report of the American Consul-General at Sao Paulo; a communication from the Brazilian Trade Bureau; and technical reports from the Forest Products Laboratory of the U. S. Forest Service.

I. *The Resource:* Parana pine is the timber species of the highest economic importance in Brazil, because of its dense stands, variety of uses, and ease of extraction. It is found on the high mountain ranges of the states of Rio de Janeiro, Minas Geraes, and Sao Paulo, and on the plateaus of the states of Parana, Santa Catharina, and Rio Grande do Sul, at an elevation of 1,800 to 3,500 feet (550 to 1,100 m.) above sea-level. Originally, its commercial range covered about 100,000 square miles (259,000 km^2), centering in the state of Parana, but this area has been reduced by years of exploitation. It is estimated that this pine now occupies over ten million hectares of land in Parana, Santa Catharina, and Rio Grande do Sul; areas occupied in the states of Minas Geraes and Sao Paulo are much smaller. Forests in the northern portion of Rio Grande do Sul are said to be virgin and to contain over 10,000 million board feet (45 million m^3) of timber.

For the region as a whole, stands average about 8,000 board feet to the acre (90 m^3 per ha.), but in moist sheltered valleys reach 20,000 board feet (260 m^3) or more. The tree is clear of all branches to a height of 75 to 100 feet (23 to 30 m) and mature trees will produce four or five 16-foot (5 m.) logs to the tree, the first two or three being practically clear. In diameter, the tree varies from 12 to 70 inches (30 to 180 cm.), with occasional diameters of seven feet (2 m.).

The timber is very sound, and defective trees are uncommon. The wood is soft and flexible, moderately elastic, strong and light, weighing about 36 lb. (16 kg.) to the cubic foot in an air-dried condition. In texture it resembles western hemlock, *Tsuga heterophylla* (Raf.) Sarg., or Pacific Coast red fir, *Abies magnifica* A. Murr., more closely than any United States timber tree and contains the longest cellulose fibers known among tree species. Generally it occurs in large quantities and is comparatively easy to exploit. In Germany, where considerable quantities have been imported, the timber when thoroughly seasoned was considered suitable for the same purposes as European

Typical stand of towering Parana pine, clear of branches for 75 to 100 feet
Photo by Jason Swallen

conifers. Its many uses include permanent construction, scaffolding, doors, sash, flooring, concrete forms, slack cooperage, etc.

II. *The Industry:* The Parana pine industry has been organized for many years, and is the most extensively developed forest industry in South America. Lumbering is by far the most important industry in the economy of the state of Parana, where approximately 80 percent of the people are dependent either directly or indirectly on the exploitation of Parana pine. Normal export of pine varies from 200 to 250 million board feet (470,000 to 590,000 m^3) annually, with Argentina the principal importer, followed by Uruguay, United Kingdom, and South Africa. The timber has also been sold in the United States.

During the war years and since the conclusion of hostilities, it has been practically impossible to secure information regarding the total production of Parana pine, but in 1941 Brazil exported more than 340,000 metric tons of wood, valued at over 7 million dollars, and of this 85 percent was Parana pine. For the first seven months of 1946 total exports amounted to 244,000 metric tons.

Milling capacity is considered capable of great expansion. The total number of pine sawmills registered in the principal lumber-producing states is over 2,000. For the most part logging and milling operations are conducted with modern equipment, identical with that in use in the southern pine forests of the United States. As a rule, sawmills use circular, band, and reciprocating saws, most of which are well mechanized and efficiently operated. The greatest handicap to the local mills is that they do not have adequate means for wood seasoning, such as kiln-dryers, etc. Before the war most of the sawmills were very well equipped with machinery of German origin. Since the war, the quality of the manufacturing machinery has seriously deteriorated and replacements are difficult to obtain. In many cases, electric power is supplied for plants and homes of workmen.

Owing to transportation difficulties and quota control, mills now have huge stocks of pine lumber on hand. The newly registered sawmills have never been allowed to begin operation, and many mills are closed because of insufficient transportation. For the industry as a whole, mills operating today have a much greater capacity to produce than actual output indicates. When transportation is improved and production quotas eliminated, lumber output will materially increase.

III. *Transportation:* Inadequate transportation seems the most formidable obstacle to the operation of the Parana pine industry.

Shipment of lumber involves three means of transportation: railroads, trucks, and ships, and, of the three, the greatest problem is railroad equipment. There is difficulty in importing rails, freight cars, and other materials for the maintenance of existing railways, and at the present time one railroad has on file between 20,000 and 25,000 requisitions for railroad cars from the lumber industry alone. This means that in the more distant zones the railroad, whose tracks cover 2,200 kilometers, is from 12 to 14 months behind schedule.

Huge stocks of lumber are without transport, and large sawmills report stocks awaiting transport for as long as two and a half years. In the southern areas, where transportation facilities are especially disorganized, over 5,000 carloads of lumber are stacked along the railroads waiting for cars. This breakdown in transportation has resulted in a great waste of wood. Mills now ship only the highest grades of their products, burning or giving away large amounts of low-grade material for whatever they can get locally. Even box shooks are made of clear lumber.

Another serious railroad problem is the shortage of coal for locomotives, and many railroads have turned to firewood for fuel.

Most logging is done by truck, and this has been affected by lack of trucks, parts, and gasoline. More good highways are needed, for practically all roads in the interior are built and kept in repair by the in-

At the base of a big Parana pine
Photo by courtesy American Forestry Association

dividual lumbermen, who now have difficulty in obtaining the proper machinery for construction and maintenance. In some cases *gasogenios* are being used, but these are impracticable in rough forest country, and cannot carry heavy loads.

IV. *Government controls:* In 1941 the Brazilian Government created the National Pine Institute (*Instituto Nacional do Pinho*) for the purpose of controlling production and preventing destructive exploitation. The Institute has been given responsibility for technological studies, supervision of output, reforestation, credit, finance, compulsory registration of producers, price-fixing, establishing quotas, and supervision of installation of new pine industries. It is directly responsible for forestry practices in Brazil, as well as for the operational activities of the entire wood industry.

In August 1946, the government prohibited the exportation of all logs, lumber, veneer, and plywood. In November, this embargo was modified to permit the exportation of a monthly quota of 80 percent of the normal exports of Parana pine. Pine lumber exports are now under an export license system and, consequently, shipments for 1947 will probably be seriously reduced.

Lumber is one of the principal items included in the Brazilian-Argentine trade agreement, which became effective 1 January 1947. This is a factor that might affect the availability of pine exports for Europe, since it is unlikely that as a purely emergency measure Brazil would be willing to divert lumber from Argentina and Uruguay, as these are established consuming countries and every effort would be made to retain their trade. On the other hand, it seems probable that Brazil would look favorably on an opportunity to build up her transportation system and establish the Parana pine industry on an economic basis, especially if means were provided to regenerate cut-over areas.

V. *Summary and Recommendations:* No question seems to exist regarding the commercial abundance of Parana pine. For years it has been a well known commodity of trade in many countries, and its value for construction and many other purposes is established. The industry exploiting it is organized and for the most part provided with modern logging equipment, although replacements are badly needed. The Brazilian Government, through its National Pine Institute, is in a position to translate the policy changes proposed here into action with minimum delay. The Institute is staffed with officials familiar with problems of pine exploitation, and has already drawn up detailed plans for national forestry and reforestation programs. The Parana pine region would seem unique in having great quantities of lumber already piled in the millyards and along the railroads. With adequate transportation facilities, this might become a ready source of emergency material for Europe.

On the debit side are transportation difficulties and the need for additional logging and milling equipment. These obstacles to a rapid expansion of pine output ought not be minimized, but they do not seem insuperable when measured against Europe's critical need for wood.

Without further investigation, all one can now say is that, as a source of emergency wood for Europe, Parana pine seems to offer better possibilities than any other timber tree.

Granted that the attitude of the Brazilian Government were favorable to this proposal, two problems would require solution: first, a careful estimate of how much Parana pine Europe can guarantee to purchase during the next three to five years; and second, equipment for logging and milling, trucks, road-building machinery, railroad equipment, and gasoline for transportation.

To this end it is recommended that FAO take early steps to:

1. Ascertain the position of the Brazilian Government toward expanding the Parana pine industry.
2. Ascertain the amount of pine for which purchase could be assured.
3. Explore the possibilities of a loan from the World Bank for providing equipment and for other necessary financing.

If the results of these preliminary consultations are satisfactory, FAO should dispatch experts to Brazil to confer with officials of the Pine Institute concerning the additional transportation and milling facilities needed and the administrative structure to be set up. FAO experts should also determine with officials of the Pine Institute what forestry measures may be necessary to provide for regeneration of the areas logged.

If FAO can bring together the necessary agencies and co-ordinate their efforts to provide an emergency supply of wood for the war-torn countries of Europe, it will have made an impressive demonstration of the effectiveness of international action. It will be an example to all nations of the role FAO is capable of assuming as an integrating factor in world economy.

Plans for the Development of Timber Production in Tropical French Territories

By the FRENCH DELEGATION

IN the semitropical zone France administers large territories which offer a wide variety of forest types. Some forest areas, especially Indo-China, are rich and have mature timber ready for felling but as local requirements are considerable because of the dense population, these supplies will not materially affect the world output of timber. In other countries, for instance in Madagascar, cutting operations on a large scale must be carried out wisely and with all possible care, so as to avoid the disastrous consequences of too great a clearing of the island. The whole central section of Africa situated between the Sahara and the equatorial forest area is covered with tropical dry forests of Sahelian and Sudanese type, which, apart from their influence on climate and soil, are of merely local economic importance.

In view of all these factors, the Plan for the Development of Colonial Timber Production has been limited, in its first stage, to those of the more accessible forest areas which could provide large quantites of exportable timber, i.e., the Gold Coast, the Cameroons, Gabon, and Middle Congo.

To get an exact idea of the present state of forestry in Africa, and to prepare a plan for the development of timber production, it is necessary to consider some statistics relative to exports from these territories.

Production — Past and Present

Large-scale felling in the vast tropical forests was started only at the beginning of the twentieth century, but by 1913 already it had developed considerably. At that time, exports from the Gold Coast and Gabon amounted to 203,000 tons. After World War I, exports were resumed with 93,000 tons being shipped in 1920. In 1924, including the output from the Cameroons, exports exceeded 300,000 tons; in 1927, they stood at 500,000 tons; and in 1937 they reached a peak of 580,000 tons. In 1938 they dropped to 390,000 tons. From that year until 1945, output was considerably reduced due to war and the consequent isolation of the colonial territories. Since then, there has been slow but steady progress, retarded by the difficulties of extracting timber and by the shortage of logging equipment.

From 1920 until 1938, despite serious economic crises, exports never fell below 300,000 tons, and before the war timber management formed, on the whole, a stable and important branch of the African economy.

Nearly all exports came from the West Coast of Africa and mainly from Gabon, the source of okoumé, *Aucoumea Klaineana* Pierre (200,000 to 400,000 metric tons of okoumé logs per year from 1925 to 1937). Exports from the Ivory Coast varied from 40,000 to 50,000 metric tons, but in 1937 they rose to a high of 85,000 tons. The output of the Cameroons stood at 30,000 to 50,000 metric tons.

The two main types of exports, representing 80 per cent of total shipment, were mahogany *Khaya* spp., and okoumé, and it is important to note that, except for okoumé, felling operations in Africa were mainly concerned with wood for production of veneer.

Raft of okoumé logs floating down a river in Gabon

The question may be asked as to why the yield of timber is so small in relation to the forest area. Briefly, the answer to this question and at the same time the reasons for the partial failure of efforts to increase forest development in French equatorial territories are as follows:

1 The mixed nature and relative poverty of tropical forests has been the cause of high costs in felling operations. These costs, to which heavy freight charges must be added, necessitated high selling prices, so that operations became limited to luxury and specialty woods which did not compete with timber grown in France or easily imported.

2) The restricted market was due to the fact that high prices limited the quantity of timber which could be extracted profitably and it was, therefore, difficult to balance output and consumption. Lack of expansion in African timber production was not due to restricted felling, but to an insufficient demand for tropical woods.

3) The relative poverty of the forest which is responsible for high felling costs will certainly be minimized when the range of species worth cutting is extended. With more normal prices and expanding markets, the vicious circle of prewar times may be avoided. Since the Timber Conference is now aiming at these solutions, it may be wondered why forest management has not already been set up on these bases.

The reason for this is simple and lies in the difficulty of selling the more common types of wood in the open market. This was difficult for several reasons, but chiefly to technical difficulties in conversion caused by the properties of common woods which are apt to be either too hard or too soft. Lack of equipment, particularly sawmills, and lack of knowledge concerning treatment, drying, and preservation of timber forced a reduction in the number of usable softwood species, so that only hard and semihard woods could be economically utilized. On the one hand, 85 percent of the world's industrial requirements consist of soft and semihard timber, principally of coniferous species; on the other hand, woodworkers meet with serious difficulties in the processing of hard and semihard tropical timbers. The mechanical properties of some woods are of too low a grade for certain uses. All of these factors, plus the resistance of buyers to strange woods, explain the difficulties encountered in putting the more abundant colonial species on the market.

Production Possibilities

Any colonial equipment plan concerned with felling and conversion of timber, has naturally to take into consideration actual forest resources. These resources depend on two factors:

1) Estimation of "economically accessible" forest areas.

2) Marketable species available from the total growing stocks. In those areas in which we are interested, the Ivory Coast, Cameroon, Gabon, and Middle Congo, the equatorial forests of primary and secondary type cover some 40 to 50 million hectares.

In 1942, the readily usable stands of the Ivory Coast were estimated by Mr. Aubréville at 2 million hectares. Mr. Grandclément, chief of the Forest Service of the Cameroons, now estimates this territory at 2.4 million hectares. The forest areas of French Equatorial Africa which could be worked during the first period of management and mechanization may be estimated at about 5 million hectares. Working plans, therefore, must be based on an area of 8 to 10 million hectares of forest where there is easy access by existing transport means and where extraction is feasible.

As to resources, calculations have been based on a list of 40 species, many of which have not yet been put on the market but which might be suitable for lumber or could be used as ordinary framewood, boxwood, etc.

Since primary and secondary forest areas are more or less equivalent in the Cameroons, the average figure of available timber is 27 m^3 or about 21 tons per hectare, and it is estimated that approximately fifty years after the first felling, growing stocks will again be ready for exploitation with a yield equal to the first.

According to these calculations, therefore, logging operations on a fifty-year rotation basis, counting on an annual output of 20 tons of timber per hectare (on one-fiftieth of the accessible forest area), can safely be considered. However, this low estimate could be increased according to market trends and to buyers' requirements.

Estimated Production Level

The figures which have been set correspond to the total output that could be reached in three years' time, but it is obvious that higher figures will be attained in the future on the basis of technical and commercial experience gained during that period.

The program for the operations of sawmills has been fixed as follows:

300,000 m^3 per annum for the Ivory Coast
500,000 m^3 per annum for the Cameroons
440,000 m^3 per annum for French Equatorial Africa (Gabon-Middle Congo)

The program for plywood output has been drafted as follows:

30,000 m^3 for the Ivory Coast
50,000 m^3 for the Cameroons
75,000 m^3 for French Equatorial Africa

The realization of an extensive program for the manufacture of wallboards has been postponed owing to the scarcity of available industrial and commercial information. The immediate setting-up of one unit of 10,000 tons in Gabon is under consideration.

Finally, the program for the production of exportable logs has been planned as follows:

300,000 tons for French Equatorial Africa
100,000 tons for the Cameroons
150,000 tons for the Ivory Coast

The technicians who have drawn up this plan have taken into account the fact that the timber operators will mainly tend to export logs for sliced and rotary-cut veneer at high selling prices. However, such logs are not always abundant and, as we have seen, markets are limited. Therefore, regulation of work (*cahiers de charges*) must (for silvicultural reasons) determine the proportion of species to be cut and, in particular, the maximum of high grade timber which may be cut, taking into account the amounts of low grade timber to be used mostly in the sawmills.

Production of Chemical Wood Products

Since mechanical processing of timber requires very specific physical and mechanical qualities in the raw

material used, the range of usable species is apt to be limited. It was thought at first that only chemical conversion would be able to absorb the timber output of tropical forests, thus allowing the complete extraction of these heterogeneous stands.

Further studies have shown, however, that this is not always the case; requirements for certain industries, such as the manufacture of chemical pulp and hydrolysis of wood, are as high as those for mechanical conversions in regard to the quality of wood which they are able to use.

However, with regard to pulp, French requirements are urgent and research work has been continued.

Owing to the present state of colonial forestry resources and because of the methods employed in paper manufacture and forestry the establishment of mechanical pulp factories does not seem to be practicable in French African territories.

Past studies in regard to chemical pulp have shown that though it is premature to consider building factories capable of as large an output as 100,000 tons per year, there is reasonable hope that this will be achieved in time. It is therefore necessary to consider the forestry problem on an industrial scale and to proceed with the establishment of pilot plants which might require subsidies in order to carry out forestry methods designed to provide them with a regular supply of timber. This might justify the establishment of a 30,000-ton plant in the Gabon.

With regard to semichemical pulp, the establishment of more or less profitable factories is now possible, but the total capacity should be limited to sure market possibilities which are estimated at about 60,000 tons for the present. It is therefore planned to set up three factories, each capable of producing 20,000 tons of semichemical pulp. One factory would be on the Ivory Coast, another in the Cameroons, and the third in Gabon.

The other chemical wood industries are not to be included in any short-term plan because research must still be continued on hydrolysis, partial distillation, and synthesis of alcohol. In any case, they will be limited by the possibilities of obtaining the wood of all grades at very low prices.

Research and Forestry Work

Research.—A plan has been approved for the establishment of a Research Institute for Tropical Forestry. It provides for the setting-up of a large research center, as well as a documentation center and teaching center, in France and also for the establishment of forestry stations and laboratories in the colonies.

Forestry Work.—Large-scale felling in the tropical forests will inevitably reduce the valuable species. Because of the great variety of species, clearings made by the extraction of the best are usually invaded by the less valuable ones. It will be necessary, therefore, to take action in order to maintain or to increase the value of the forest.

Tropical forestry raises technical problems, solution of which is rather difficult in view of the lengthy experimental work involved. However, work already carried out, sometimes on quite a large scale, has provided a basis for drawing interesting conclusions and for the establishing of a general improvement program.

French delegates

Mr. Aubréville was assigned to study this question while on a mission in the various forest regions of Africa, but his report has not been published. However, some general information which it gives on Gabon and the Ivory Coast and Cameroons is summarized below.

Gabon.—Due to the particular characteristics of okoumé, it would be possible in 50 years to convert 2 million hectares of Gabonese forest so as to achieve an annual yield of 8 million cubic meters of okoumé. This work would entail conversion of 40,000 hectares per year. Such a program would require 10,000 workers, 80 European foresters, and in addition native help recruited locally. The annual expenses might total 60 million French francs at the rate of exchange in August 1945.

Ivory Coast and Cameroons. — Forestry problems are very similar in both these territories but quite different from those of Gabon because of the absence of okoumé in these regions.

An improvement program of 800,000 hectares in 20 years, i.e., 40,000 hectares yearly, would mean a future yearly output of 2.5 million cubic meters. This would require about 8,000 workers.

The technical problems have been studied without regard to financial and labor requirements. It is almost certain that the programs outlined will not be carried out in their entirety, largely because of the lack of labor.

It is important, however, to stress the necessity of maintaining and even increasing the forestry resources by improvement measures.

Labor

It has been estimated that the actual manpower needed in the three colonies containing the largest forest areas to carry out the Plan most efficiently would be at least 15,000 workers for the Ivory Coast, 10,000 workers for the Cameroons, and 10,000 workers for the Gabon and Middle Congo, making a total of 35,000 workers.

There remains the working out of measures to

1) maintain the existing manpower in the working areas;
2) to increase the number of these workers;
3) to increase their efficiency.

Generally speaking, the most important measures will be the following:

1) the establishment of a wage scale based on employment categories and related to the living costs in

each colony and to the increasing needs of the native population; bonuses should also be considered;

2) application of social legislation;

3) improvement of working conditions by intensive mechanization together with the necessary training of workers;

4) improvement of living standards of the native population and increase of their purchasing power by supplying the territories with ordinary commodities and industrial products.

Creating an Organization

It became imperative to create an organization which would set up and finance the Plan for the Development of Colonial Timber Production. The creation of a French company, the National Corporation for Tropical Woods, under the direction of the Minister of French Overseas Territories, was provided for in the law of 30 April 1946. The objectives of this corporation are to create conditions in French West Africa, the Cameroons, and French Equatorial Africa under which forest production can be developed according to the Plan in order to satisfy the needs of the mother-country and the world market and, finally, in order to increase to the maximum production efficiency.

In order to achieve these aims, the corporation will be independently empowered to exercise directly or to centralize certain functions of an administrative or professional character. The necessary powers will be delegated to it. The corporation, on the advice of local committees and with the approval of the Minister of French Overseas Territories, will determine in particular the allocation of foreign currency and equipment granted to effect the Plan.

The organization will also make arrangements for obtaining and making available the public services necessary to the working of this plan. It will ensure the establishment and management of installations essential to forest production. This board will be consulted in various matters, such as modification of forest regulations, rights and taxes, transportation charges, warehousing and handling costs, creation or expansion of enterprises, etc.

The corporation will be directed by a governing body and an executive board in Paris and will have local committees within the agencies of the various territories and districts—the Ivory Coast, Cameroons, Gabon, and Middle Congo. The governing body will consist of representatives of the government and representatives of professional interests. A director general proposed by this body will be appointed by the Minister of French Overseas Territories. The local committees within the agencies will be constituted in the same way and will be presided over by the Chief of the Forest Service of each colony.

In order to become established, the corporation will have to receive an appropriation from the Fund for Investment and Economic and Social Development. Other expenses will be covered as follows: for publicity, by special taxes on exportation of forest products, and for the building up of public services by special appropriations. The financing of all other operations will be assured either by the usual credits or by compliance with the Decree of 24 October 1946 applying the above-mentioned law of 30 April 1946.

This scheme, which has been fully approved and accepted by the representatives of the interests of all concerned, will make it possible to carry out the Plan under very favorable conditions.

Program of Major Public Works Projects

It is obvious that it is not enough to produce wood: one has to assure its transportation to a port, its loading, and its overseas shipment. The over-all program of major projects was established with particular regard to the forestry program.

On the Ivory Coast, it has been decided to develop the Abidjan harbor, to create a wharf at Sassandra and a floating pier at Assinia, to build roads and a canal through the lagoons, and to purchase equipment for coastal trade. In the Cameroons, the Douala harbor will first of all be equipped with modern machinery for the handling of wood and with a large wood storage yard. Later on, it will be enlarged. The shipping of timber from the regions of Eseka, Edea and Mbalmoyo will require extension of the railway system. Kribi harbor, the outlet of an important forest belt, will be similarly equipped.

In French Equatorial Africa the immediate building of a well-equipped wharf at Orwendo is necessary to permit the unloading of equipment essential to the carrying out of the production program of this region. The renewal of landing, loading, harbor, and lighterage facilities, the creation of a large wood storage yard and a network of communicating roads, and the building up of a common headquarters will be effected simultaneously.

A similar program is planned at Port Gentil and especially the erection of a wharf at Akosso Point. At Pointe-Noire, which already has a fairly well-equipped harbor, the only improvements will be to increase the number of cranes and add a wood storage yard. The rolling-stock of Ocean-Congo Railroad will be increased.

* * *

This plan for the development of forest production is only a first step and indeed a very modest one. If the French Government has evaded the drawing up at present of a more ambitious plan, it has acted with wise caution for the reasons set forth above.

With their present experience and knowledge and taking into account the world situation of the different wood-producing and wood-consuming countries, the French technicians, who are fully aware of all the technical, social, and commercial difficulties they are facing, are confident that they will be able to carry out this plan and also find an outlet for the materials produced. The possibilities of the forest allow us to consider a second part to this scheme, but it will be studied in detail and put into effect only when markets can be assured in a normal economy for the whole supply of available products. That will be the case when the processing and utilization of such a complex raw material as tropical wood will have been perfected, and when intelligent publicity will have shown consumers the world over how to put it to the best use.

Exportable Timber Resources of the British Colonial Territories

By the BRITISH COLONIAL OFFICE

THE British colonial territories in the tropical zone are important sources of hardwood supplies. They also contain small quantities of softwoods, but these are relatively unimportant. The areas with a clear exportable surplus of hardwoods are British Guiana, British Honduras, the Gold Coast, Nigeria, the Malayan Union, North Borneo, Sarawak, and the British Solomon Islands Protectorate.

In the tropical forests the species are generally mixed and do not occur in pure stands as in the case of the coniferous forests of the temperate zone. In consequence, logging in the territories mentioned above has in the past been conducted on a selective basis. A few species of high export value have been extracted, with the result that in large areas of the forests there are now only secondary timbers which can furnish an economically exploitable volume of timber.

Logging operations conducted on a selective basis are uneconomic owing to the high extraction costs and are also wasteful of the forest resources by reducing the capital value of the forests. Efforts are therefore being made to introduce a system under which all marketable species of timber will be extracted at one operation, so that the cut-over areas can be handed over to the local forest department for regeneration. It is hoped that this system will reduce the cost of timber to such an extent as to bring it within the purchasing power of local consumers, thus creating a market for the secondary species. In order to ensure the most economical use of the timber resources, operators are also being encouraged to set up local sawmills and veneer and plywood factories. One such factory is now in process of construction in Nigeria, and it is hoped that another will be established at an early date in the Gold Coast. It will in future be the policy to encourage the partial processing of timber before export as being the best means of ensuring the most intensive utilization of timber resources.

In some British Colonial territories there is a large area of tropical rain forest, but this area is being gradually reduced by shifting cultivation under which the inhabitants clear the forest for farming purposes and, after exhausting the soil by continuous cultivation, proceed to clear a further area of forest. If these cleared areas were allowed to lie fallow for a reasonable period a useful secondary growth of timber might be obtained; but unfortunately they are usually subjected to further farming operations before this can take place. It is difficult to control this shifting cultivation, which has been practiced from time immemorial and is accentuated by the pressure of population. The only effective remedy at present is to increase the area of reserved forest. This is a slow process, as the people are jealous of their rights, and they have to be educated in the advantages of preserving the forest estate. Nevertheless, the local governments are persevering with their efforts and the areas under reservation for forestry purposes are being gradually increased. The general object of British colonial forest policy is to reserve an adequate area of forest to secure the conservation of the soil and thereafter to provide a sustained yield of timber for local needs and for export.

Owing to the gradual improvement of the standard of living in the British colonial territories there will be an increasing demand for timber for local purposes. This should not materially affect exports for some considerable time. Any marked increase in exports, will, nevertheless, depend upon the readiness of overseas markets to accept hitherto unused timbers. Several of these have been accepted during the recent war and have been found to be suitable substitutes for the established timbers such as mahogany. Any rapid increase in exports also depends upon the availability of logging and transport equipment, the supply of which at present is very difficult.

British Guiana

The area of British Guiana is approximately 83,000 square miles (21.5 million ha.), and the population about 357,000.

The forests represent one of the colony's most important natural resources. They extend over approximately 70,000 square miles (18 million ha.), representing 84.7 percent of the total land area of the colony. These forests can be considered as falling within two zones, a near interior or accessible zone of approximately 14,000 square miles (3.6 million ha.) and a far interior or inaccessible zone of approximately 56,000 square miles (14.5 million ha.). It is believed that the forests of the near interior can provide for all possible expansion of the timber industry within, say, the next 25 years, and that in the circumstances there is at present no justification for expenditure on the development of the far interior forests.

The forests are of the typical evergreen rain forest type, but are unusual in that they show a high proportion of gregariousness, that is, over large areas of forest one species is sufficiently plentiful to give its name to the forest type. Thus, there are the Wallaba, *Eperua spp.*, forests, Mora, *Mora spp.*, forests, Greenheart *Ocotea spp.*, forests, Morabukea, *Mora gonggrijpii*, forests, etc. Apart from ths relative richness of one species in certain areas, the most noticeable feature is the enormous number of species of which the forests are composed: over 500 different species of trees growing to timber size have been recorded from the near interior forests alone.

Soft hardwoods have to date played a minor role in forest utilization, largely because of cheap imports of coniferous softwoods. The possible advent of a plywood factory would bring the local soft hardwoods into their own.

PRODUCTION FROM CROWN LANDS
(*Thousand cubic feet*)[1]

	Average for 1936-40	1941-45	1945
Greenheart	954	1,219	1,156
Other timber	320	1,036	1,151

The peak year was 1942, with a production of 1,696,000 cubic feet.

EXPORTS
(*Thousand cubic feet*)

	Average for 1936-40	1941-45	1945
Greenheart	379	241	302
Other timber	44	44	22

[1]1,000 cubic feet = 28.32 m³.

It is hoped to increase the volume of production of hardwoods for export from the present level of 350,000 cubic feet (9,900 m³) to 1.5 million cubic feet (42,500 m³) by the end of 1949, and to maintain it at 2 million cubic feet (57,000 m³) thereafter. If there is some degree of security in export markets it should be possible to increase production still further.

At present the extraction of timber is mainly by water transport. Logging has not progressed, generally speaking, more than approximately a few miles from the river banks, and if there is to be any large increase in production it will be necessary to increase the use of mechanical extraction equipment.

BRITISH HONDURAS

The area of British Honduras is 8,870 square miles (2,300,000 ha.) and the population 60,000.

The total area of forest is 8,150 square miles (2,110,000 ha.), which is about 92 percent of the total land area. Nearly 50 percent of the area of the colony has been alienated, but alienation is now being restricted.

The forest reserves amount to 220 square miles (57,000 ha.), or about 2.5 percent of the total land area. The area of exploitable hardwoods is 5,950 square miles (1,540,000 ha.) and that of exploitable softwoods 105 square miles (27,000 ha.). The hardwood forests consist chiefly of mahogany, *Swietenia spp.*, and the softwood forests of pitch pine, *Pinus caribaea* Morelet. The forests have been subjected to extensive damage from periodical hurricanes, and the pine forests from fire also.

OUTPUT OF HOME-GROWN WOOD
(*Thousand cubic feet*)

	1934-1938 (Avg.)	1939	1945
Softwoods	178	49	310
Hardwoods	1,508	1,518	1,307

EXPORTS
(*Thousand cubic feet*)

	1934-1938 (Avg.)	1939	1945
Soft timber	36	4	30
Hard timber[1]	4,765	2,298	4,054

[1]These figures include re-exports from Guatemala.

Until very recently there was no control of exploitation of forest produce on privately-owned land. There has consequently been continuous dissipation of the stocks of mahogany without adequate replacement to safeguard the future production of the forests. The increasing use of machinery in mahogany extraction has made possible the exploitation of remoter areas of forest. Depreciation of the forest capital by exploitation and by hurricane damage has been considerable. Records show that hurricanes have crossed the colony on an average once every 15 years, although more recently the incidence has increased. Storms in 1941, 1942, and 1943 damaged to a greater or lesser extent over 4,000 square miles (1 million ha.) of forest or agricultural land, and if the damage inflicted by the 1931 hurricane is added to this figure, the total land area affected during the past 16 years amounts to 5,600 square miles (1.5 million ha.), or 63 percent of the total area of the colony.

Annual firing of the coastal and mountain pine ridges has hastened the debilitation of the mature and over-mature stocks of pine, and has precluded natural regeneration. Unless exploitation of pine is accompanied by fire protection, the pine forests will become virtually nonexistent. In 1945 legislation was passed, under which all persons burning vegetation for cultivation were required to make a fire trace around the area to be burned.

Future policy will be concentrated on the regeneration of mahogany and the finding of markets for useful secondary timbers. The government will also require more systematic working of existing concessions.

GOLD COAST

The area of the Gold Coast is 79,000 square miles (20.5 million ha.), and the population 4 million.

The total area under forests is 60,000 square miles (16 million ha.), or 76 percent of the total land area. This is made up of 21,000 square miles (5.4 million ha.) of exploitable forest, 12,000 square miles (3.1 million ha.) of potentially exploitable forest and 27,000 square miles (7 million ha.) of other land classed as forest.

The forests of the Gold Coast are owned by the community. An area of 6,000 square miles (1.6 million ha.) has been constituted as forest reserves; this reservation does not alter the ownership. Of this area, about 2,000 square miles (0.5 million ha.) are suitable for intensive exploitation, the remaining 4,000 square miles (1 million ha.) being essentially protective forests. The rest of the forests are outside the control of the Government Forests Department and are being gradually depleted by shifting cultivation. "Salvage" felling is undertaken in these areas before the land is used for farming, and the bulk of the exports of timber from the Gold Coast have hitherto been derived from such fellings; very little timber has been exported from the forest reserves.

The present total annual cut of standing timber amounts to approximately 9 million cubic feet (255,000 m³), and, if projects now under consideration materialize, this figure will rise to about 20 million (566,000 m³) in the round. This increased cut exceeds the estimated annual increment of the accessible areas (2,000 square miles or 0.5 million ha.) of the forest reserves, which comprise the permanent forest estate in the closed forest zone. In practice, however, it will be found also in the unreserved forest areas, estimated at 12,000 square miles (3.1 million ha.),—areas which under their present status are destined to progressive alienation to farming. It is estimated that approximately 300 square miles (78,000 ha.) are being cleared annually, which will give a life of approximately 40 years to these forest areas. The timber available on these 300 square miles is more than sufficient

to supply the ultimate over-all cut mentioned above, and may be regarded as salvage felling prior to the final destruction of the forest. Thereafter supplies will be restricted to the forest reserves and the yield will inevitably drop, at any rate, until silvicultural operations designed to improve the growing stock have come to fruition.

OUTPUT OF HOME-GROWN WOOD
(*Thousand cubic feet*)

	1934-38 (Avg.)	1939	1945
Hardwoods	5,690	6,685	13,090

EXPORTS
(*Thousand cubic feet*)

	1934-38 (Avg.)	1939	1945
Hardwoods	1,275	685	3,529

The Gold Coast railway is now carrying to port about 75,000 tons of timber a year, and with the opening up of new concessions recently negotiated it will be called upon to move timber at the rate of 150,000 tons a year at an early date. The ultimate annual amount of timber to be railed to port will be in the neighborhood of 250,000 tons per annum. This will require an expansion of harbor facilities at Takoradi, and this matter is now under consideration.

NIGERIA

The area of Nigeria is 333,000 square miles (86.2 million ha.) and the population about 22 millions.

It is necessary to correct the commonly held impression that Nigeria is a country of heavy evergreen rain forest. It is not. Nigeria is in the main a country of savannah woodland of tall grass beneath small trees of orchard habit. Although this woodland is veined along its water courses by narrow fringing forests, often containing good timber, the predominantly evergreen and continuous high rain forest is confined to a coastal belt which is used for farming.

It is difficult to give an accurate estimate of the areas of land under different uses in a country which has such a mosaic of undemarcated and ill-differentiated farm, forest, or woodland as Nigeria. To give a reasonably reliable estimate it is necessary to confine the definition of *forests* to its early meaning of a demarcated area set aside for forestry purposes, whether it is covered by rain forest or sparse scrub, and to classify all undemarcated lands not specifically set aside for forestry even though they are covered by woodland or forests as *waste land*. At the end of 1938 there were 21,000 square miles (5.4 million ha.) of demarcated forest, of which 6,350 square miles (1,650,000 ha.) were under the direct control of the central government and 14,650 square miles (3.8 million ha.) under the control of native administrations, equivalent to local authorities, supervised by the Forest Department of the central government. The whole area can therefore, for practical purposes, be classed forests. Of this area it is doubtful if more than 5,000 square miles (1 million ha.) are under closed high forest, the remainder being savannah woodland. Probably not more than 3,000 square miles (780,000 ha.) of the high forest were exploited in 1938. If the land classed as "waste land" is temporarily included in the designation "forest," the area of forest would be 162,800 square miles (42.2 million ha.). The situation with regard to the volume of timber is obscure. Timber exploitation in Nigeria has relied almost entirely upon what may be described as "salvage" felling, which is timber felled on potential farmlands before it is burned by the farmers. Yield cannot be correlated with area except in the forest reserves, which have furnished only a small part of the outturn.

Recent investigations by actual recorded fellings give a yield of 283,000 cubic feet (8,015 m^3) (Hoppus quarter-girth measure) of logs of species merchantable at the present time, on a sample square mile of good average high forest in the reserved area. This yield amounts to about 10 tons to the acre (25 tons per ha.) Comparing this with the general experience of timber firms in Nigeria, a volume of 400 cubic feet (11.3 m^3) Hoppus, or 10 tons of logs to the acre (25 tons per ha.) is tentatively accepted for good average high rain forest as a working estimate. It must be remembered, however, that much of this good average high forest has been selectively logged in the past, and this figure may not truly represent the yield of untouched mature forest.

The savannah woodlands have been worked chiefly for firewood.

Up to the beginning of the recent war the Nigerian high forests were exploited mainly by selective felling for large logs of a few species for export. It has since been realized, however, that the high forests are far from inexhaustible, and a new forest policy has recently been introduced under which concessionnaires will be required to extract all marketable species within a given period, and to hand over the cleared areas to the Forest Department for regeneration. The local demand for timber in Nigeria is increasing rapidly and the government has embarked upon a 10 years' development program which will absorb large quantities of timber. It is not anticipated, therefore, that there will be any large increase in the quantities available for export. The increased demand for timber will, however, lead to the working of hitherto inaccessible forests and forests of poor quality for small dimension timber, and also to the marketing of low-grade timber and the use of new timbers. The instalment of a plywood mill, which is now proceeding, will encourage these developments.

OUTPUT OF HOME-GROWN WOOD

	1934-38 (Avg.)	1939	1945
Hardwoods	[1]46,800 trees	33,414 trees	73,903 trees

[1]Approximately 14 million cubic feet or 0.4 million m^3.

These statistics only concern trees felled under permit. Large numbers of trees are taken free under native rights.

EXPORTS
(*Thousand cubic feet*)

	1934-38 (Avg.)	1939	1945
Hardwoods	2,873	2,262	4,184

THE MALAYAN UNION

The Governor has reported that it is probable that the requirements of the rehabilitation and development programs will absorb the timber resources of the Malayan Union during the next few years and that there will be no appreciable exportable surplus during that period.

Before the recent war, Malaya regularly exported timber to Hong Kong, China, Mauritius, Arabia, and South Africa. The position of these markets vis-à-vis

United Kingdom delegates

European requirements will require consideration, when sufficient data is available, before a long-term policy can be framed.

North Borneo

The present production of timber in North Borneo is on a comparatively small scale owing to the destruction during the recent war of sawmilling equipment. The estimated output for 1947 is 1,950,000 cubic feet (55,200 m^3) of logs and 550,000 cubic feet (15,600 m^3) of lumber, compared with an average annual production for the years 1937 to 1941 of 6,918,750 cubic feet (195,900 m^3). A large proportion of the estimated output will be required within the colony for reconstruction purposes. For the short term, little export to European markets can be expected.

Sarawak

The area of Sarawak is 50,000 square miles (13 million ha.), and the population about 475,000. The forest area amounts to 41,000 square miles (10.6 million ha.), of which 15,000 square miles (3.9 million ha.) contain merchantable timber, the remaining 26,000 (6.7 million ha.) being inaccessible or unprofitable to work. The volume of merchantable standing timber is estimated at 1.3 million cubic feet per square mile (142 m^3 per ha.) or a total of 19,220 million cubic feet (540 million m^3) for the total area of merchantable forest. These volumes represent the amount of timber of all classes which have at present a known commercial value, but take no account of the numerous soft-wooded species which are now valued only as firewood but which might in future be found of use where durability is not an essential feature.

The amount of alienated land which still remains under forest is negligible. It may therefore be said that all the forest land is the property of the State, but only such areas as have been constituted reserve or protected forests are under the direct control of the Forest Department.

British Solomon Islands Protectorate

The area of the British Solomon Islands is about 11,000 square miles (2.8 million ha.) and the population in the neighborhood of 94,000.

Forests or tree growth cover most of the land surface not under cultivation. The natives engage in shifting cultivation, utilizing tree cover for fallow. Local demand for timber is small owing to the sparseness of the population. Exports have hitherto been confined to Kauri, *Agathis spp.*, and a few other timbers from trees found near the Kauri trees. Exports have been chiefly to Australia and New Zealand, which form natural markets owing to their proximity. Transport costs would be heavy on timber exported to more distant destinations. Proximity to the sea of many stands of timber in the British Solomon Islands might enable local timber to compete with sources of supply nearer to the market but less accessible. The natural markets for the Solomon Islands timbers are to be looked for in the Pacific countries rather than in Europe.

No accurate statistics of forest resources are available. Secondary growth following shifting cultivation probably covers half the forest area. Of the remaining forest area of, say 5,000 square miles (1.3 million ha.) only a small proportion can be regarded as accessible to sea-borne extraction in the general absence of roads. This accessible area might amount to 10,000 acres (4,000 ha.) and is subject to survey. Accessible forest examined so far has been found to consist of gregarious species, an unusual feature of tropical rain forests.

Exports 1937 to 1941

	Cubic feet	(or)	Cubic meters
1937	119,329		3,379
1938	247,901		7,020
1939	142,806		4,044
1940	168,729		4,778
1941	97,875		2,772

Large quantities of local timber were used by the military forces during the war.

Delegates and Representatives Attending the International Timber Conference

MARIANSKE LAZNE ,CZECHOSLOVAKIA, 28 April—10 May 1947

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Head Delegate:
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F. Feest, Director, Timber Office
R. Holowatyj, Timber Expert
H. Klotzinger, Council of Industrial Management
H. Lorenz-Liburnau, Chief, Forest Department, Ministry of Agriculture and Forests
E. Schlager, President, Federal Organization for Prefabricated Houses
R. Wacha, Federal Ministry of Commerce and Reconstruction
H. Wartburg, Chief, Timber Production Board

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Andrea Scheidlin

BELGIUM
(Also representing Luxembourg)

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Members:
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P. Staner, Director, Ministry of Colonies
P. Wauters, Director, Ministry of Agriculture

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Czechoslovak delegates

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CZECHOSLOVAKIA

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L. Rys, Ministry of Industry
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Gharib Elgammal, Delegate of Ministry of Commerce and Industry to Office of Timber Distribution
Moustapha Hachem, Secretary, Royal Egyptian Legation, Prague
Evangelos Tryphon, Member, Office of Timber Distribution
Charles Zayan (Daira Bassili Pasha), Member, Office of Timber Distribution

Karel Kavina, Chairman, Czechoslovak National FAO Committee

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Members:
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J. Vory, Master of Forestry

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M. Naslund, Head, Forest Research Institute
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W. A. ROBERTSON, Principal, Colonial Office
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ALLIED CONTROL COUNCIL — AUSTRIA
U. S. ZONE

Representative:
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ALLIED CONTROL COUNCIL — GERMANY
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Representatives:
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R. HENRY, Chief, Building Materials and Construction Section, Economic Division, U. S. Military Government
J. KIRCHER, Chief of Forestry, U. S. Military Government

FRENCH ZONE

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P. RODARY, Conservator of Waters and Forests, Allied Control Council
R. ROSE, Administrator, Wood Industries

EMERGENCY ECONOMIC COMMITTEE FOR EUROPE

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Representatives:
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T. GEIGER, U. S. A., Member Timber Sub-Committee (also delegate of U. S. A.)
A. KOUWENAAR, Netherlands, Member Timber Sub-Committee (also delegate of Netherlands)
H. JONKER, Netherlands, Member Timber Sub-Committee (also delegate of Netherlands)

EUROPEAN COAL ORGANIZATION

Chief Representative:
J. W. HOARE, Chief, Production Division

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

Chief Representative:
ANTONIN BASCH, Chief Economist, Research Department

INTERNATIONAL FEDERATION OF BUILDING AND WOOD WORKERS

Chief Representative:
J. W. VAN ACHTERBERGH, General Secretary

Translator:
E. F. AHLSTROM

INTERNATIONAL TRADE ORGANIZATION
(Preparatory Commission)
(*See United Nations*)

UNITED NATIONS

Chief Representative:
B. R. TURNER, Assistant Director, Economic Affairs Department

Representatives:
CLAIRE DE HEDERVARY, Economic Affairs Department
P. R. JUDD, Chief, Commodity Section, Economic Affairs Department (also representative of Preparatory Commission of International Trade Organization)

WORLD FEDERATION OF TRADE UNIONS

Chief Representative:
A. ZAPOTOCKY, Czechoslovakia

Representatives:
A. HARTUNG, CIO Regional Director
O. WESTLING, Secretary, Trade Union Federation of Sweden

Staff:
F. HOLY, Central Secretary, Union of Timber Industry Workers
J. VANEK, Adviser

O. Westling, Trade Union Federation of Sweden

CONVERSION FACTORS

Adopted by FAO Forestry and Forest Products Division in June 1947. Tables on "Wood Measures" follow recommendations of the Statistics Conferences held in Washington and Rome in 1947.*

I. GENERAL MEASURES

Units of Length		Units of Area		Units of Volume	
1 inch	= 2.540 cm.	1 square inch	= 6.452 cm^2	1 cu. in.	= 16.39 cm^3
1 centimeter	= 0.3937 in.	1 cm^2	= 0.155 sq. in.	1 cm^3	= 0.061 cu. in.
1 foot	= 0.3048 m.	1 square foot	= 0.0929 m^2	1 cu. ft.	= 0.02832 m^3
1 meter	= 3.281 ft.	1 m^2	= 10.76 sq. ft.	1 m^3	= 35.31 cu. ft.
1 yard	= 0.9144 m.	1 square mile	= 259 ha.		
1 meter	= 1.094 yd.	1 hectare	= 0.003861 sq. mi.		
1 mile	= 1.609 km.	1 acre	= 0.4047 ha.		
1 kilometer	= 0.621 mi.	1 hectare	= 2.471 acres		
1 yard	= 3 feet = 36 inches	1 square mile	= 640 acres		

NOTE: For Wood Measures see, Table II, "Processed Wood" and "Roundwood," below.

Units of Capacity Liquid Measure		Units of Mass		Pressure	
1 cu. in.	= 0.01639 liter	1 pound	= 0.454 kg.	1 lb./sq. ft.	= 4.882 $kg./m^2$
1 gallon (U. S.)	= 3.785 liter	1 kilogram	= 2.205 lb.	1 $kg./m^2$	= 0.2048 lb./sq. ft.
1 gallon (Imp.)	= 4.542 liter	1 short ton	= 0.9072 metric tons	1 lb./sq. in.	= 703.1 $gm./cm^2$
1 liter	= 61 cu. in.	1 metric ton	= 1.102 short tons	1 $gm./cm^2$	= 0.0142 lb./sq. in.
1 liter	= 0.2642 gal. (U.S.)	1 long ton	= 1.016 metric tons	1 lb./cu. ft.	= 16.02 $kg./m^3$
1 liter	= 0.3170 gal. (Imp.)	1 metric ton	= 0.9842 long tons	1 $kg./m^3$	= 0.06243 lb./cu. ft.
1 gallon	= 4 quarts				

1 cu. ft./acre = 0.07 m^3/ha. 1 m^3/ha. = 14.29 cu. ft./acre

II. WOOD MEASURES

ROUNDWOOD

Product	Unit	Solid Volume Without Bark	
		Cubic Meters	Cubic Feet
Sawlogs	1,000 board feet	4.53	160
Pulpwood	Cord (128 cu. ft.)	2.55	90
	Stere (Raummeter)—coniferous	0.75	26.5
Fuelwood	Cord (128 cu. ft.)	2.12	75
	Stere — coniferous	0.70	24.7
	Stere — broadleaved	0.65	23.0

PROCESSED WOOD

Solid Volume of Lumber				Equivalent Solid Volume of Sawlogs	
Cubic Meters	Cubic Feet	Petrograd Standards	1,000 Board Feet Measure	Cubic Meters	Cubic Feet
1	35.3	0.214	0.424	1.67	59.0
0.0283	1	0.00606	0.012	0.0476	1.68
4.672	165	1	1.98	7.79	275
2.36	83.3	0.505	1	3.96	140

*Inches, feet, and yards are the U. S.:British units.

THE Nations accepting this Constitution, being determined to promote the common welfare by furthering separate and collective action on their part for the purposes of

raising levels of nutrition and standards of living of the peoples under their respective jurisdictions,

securing improvements in the efficiency of the production and distribution of all food and agricultural products,

bettering the condition of rural populations.

and thus contributing toward an expanding world economy.

hereby establish the Food and Agriculture Organization of the United Nations . . . through which the Members will report to one another on the measures taken and the progress achieved in the fields of action set forth above.

—Preamble to the Constitution of the Food and Agriculture Organization of the United Nations

FAO Member Nations

Australia
Austria
Belgium
Bolivia
Brazil
Canada
Chile
China
Colombia
Costa Rica
Cuba
Czechoslovakia
Denmark
Dominican Republic
Ecuador
Egypt
El Salvador
Finland
France
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Haiti
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Italy
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